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GOOD PICTURES!

AUGUST, 25c

Unseen COLORS DISTORT YOUR PICTURES!



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candles

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FOR EVERY-  
ONE TAKING  
PICTURES

# Minicam Photography

MINIATURE  
CAMERA  
MONTHLY

EDITED BY WILL LANE, A. R. P. S.

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## IN FOCUS



LETTERS to this department may be addressed to "In Focus" Department, MINICAM Magazine, 22 East Twelfth Street, Cincinnati, Ohio.

## Where are We Heading?



Sirs:

Maybe the famous Salt Mines of Siberia aren't so far away as some of us would imagine. Perhaps you think this sign appears in the Aleutian Islands or on Bering Strait where Alaska is just a hop, skip and jump from Soviet Siberia? Is that where we are heading? Will we soon be facing Adolph Hitler along the Arctic circle? I don't know, but this sign was snapped on highway 62, not far from St. Meinrad, in southern Indiana.

GEORGE F. JACKSON.

Evansville, Ind.

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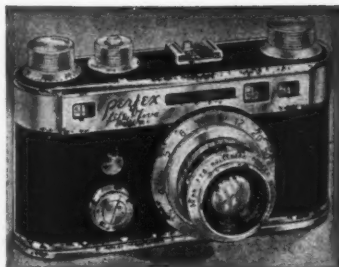
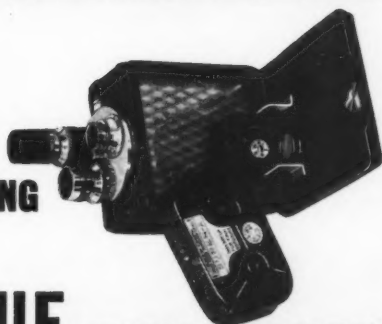




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## "Into the Wind"

Sirs:

This photo might be called "High Wind." The photog. really had to lean into the wind as much as the photo shows to maintain his balance while shooting something on the lower deck. He is Albert Schwab, student photographer at Overbrook High School. The picture was taken on an excursion steamer on the Upper Hudson during a class trip to West Point Military Academy.



Anyone who has been on the Hudson on a windy day such as we encountered will readily attest to the validity of the photo. A hilarious time was had by all with a wind so high it had the girls' dresses around their necks!

LEONARD BECKER.

Philadelphia, Pa.

## Photography in England

Sirs:

My American friends have asked me about photography here while we are at war and I am glad to say that war-time restrictions have not hampered amateur photography to any great extent although one must keep away from military objects and works of defense.

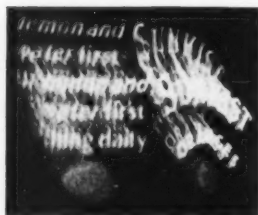
STANLEY ATKINSON

Newcastle-on-Tyne, England.

## "Air Raid"

Sirs:

Times Square may have cause to tremble one of these days, and a sign on the Great White Way might look like this with bombs dropping — if we don't have more blackout practice. You once had a picture like this.



The effect was made by shooting at a slow shutter speed, 1/10 second, and swinging the camera at the same time.

I only hope it does not represent the shape of things to come.

Brooklyn, N. Y.

ALBERT E. THOM.



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WRITE FOR  
FREE BOOK

## "Blackout Flash"

Sirs:

I have been thinking of using one of those infra-red "Blackout" filters over my flash reflector as described in MINICAM, June, page 20. But I would use it for taking pictures of weddings, courtroom scenes, etc., where the flashes are objected to.

It occurs to me that it might be just as good if the flash were subdued. In many cases, dim flash would not be noticed.

HOWARD AMENS

San Francisco, Calif.

THE LIGHT of a flash lamp lasts only a fraction of a second. It often is not noticed unless one is looking toward the flash. Animals and children pay no attention to it. The Speed Midget Photoflash has the shortest duration (1/200 second) and therefore is least noticeable. Other lamps having a brief flash include the No. 5 (1/75 second) and No. 11A (1/60 second). Flash lamps can be coated to cut down their actinic output; this is described briefly on page 112—ED.

## Photogenic?

Sirs:

MINICAM is a bright spot of the month not only for its informative articles and special features, but for the battles that are fought "In Focus" and out of focus.

I should like to suggest the word "Photophilic" to replace the word photogenic. It is surely Greek to me, but it implies a liking for being photographed. Too many of us say we don't take a good picture. It is because we try too hard. We "mug" instead of being natural.



"My husband needed him for part of a photographic composition!"

## EAT YOUR CAKE AND HAVE IT TOO!



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I believe photogenic people are those who feel at ease and able to put themselves into the spirit and mood of a scene with the least effort.

ADDISON SIMS.

Seattle, Wash.

## "Jekyll and Hyde"

Sirs:

I want to butt into the mystery dept. of July MINICAM (page 4) to put in my theory of the "Dr. Jekyll and Mr. Hyde" photo showing a man smiling with one side of his face and frowning with the other as seen in a mirror.

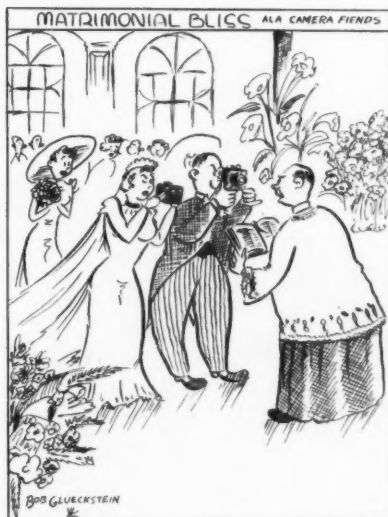
I bought the magazine and sat at the drug-store fountain drinking a coke and reading the "In Focus" column.

I believe it is possible that the subject has the right side of his face paralyzed. One sometimes meets people who have suffered an injury and are left in that condition. Being a dentist, I have often noticed a crooked, one-sided smile after certain nerves are anesthetized. But I prefer to think it the result, as you suggested, of deliberate mugging.

It can be done. I tried sticking the tip of my tongue through my teeth at the corner of my mouth at the right, and at the same time smiling to my left at the soda fountain mirror. There was the solution of the riddle. The left side of my face was smiling in the mirror and the right side was serious.

H. JAMES HALBEISEN, D.D.S.

Lisbon, N. D.



"Would you mind paying SOME attention to the ceremony?"

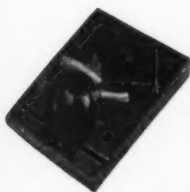
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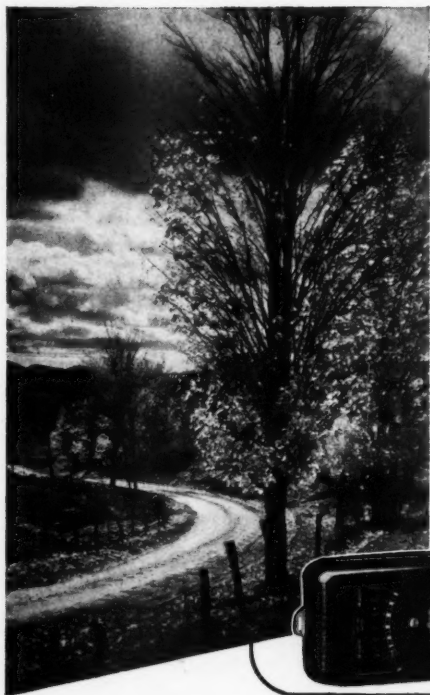
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*Exposure Meters*



"The club decided to try a mutual-criticism and friendly-discussion night."



## Poetry Department

Sirs:

The pictures, sent, are just a few,  
To show the kind of job I do.

I'm not a whiz, I  
know; but say,  
Who else got perfect  
in one day?

And as you see, I  
don't confine  
My snapping to one  
certain line.

Variety has filled my  
files

With frogs and skunks  
and endless miles  
Of scenic views, which  
here abound.

More beauteous sights  
cannot be found.



But say, I 'most forgot to tell  
That I think MINICAM is swell.  
I've missed two copies, I confess,  
Since first it came from off the press;  
But that's because I didn't ken  
That such was in existence, then.  
And do I use them? I should say!  
I read, and read, 'most every day.  
Yet not content to just peruse;  
I try the things that I can use.  
And I've been benefited, too,  
By doing as it bids me do.

ROXIE FITZSIMMONS.

New Martinsville, W. Va.

## Poetic License

Sirs:

"Help!" cried Tessar as Berghiel opened the gate and made off with Dollina. "ZEISS will never do," she cried as she ran and got into her FOCAL PLANE. "CONTAX," cried LEICA as he spun the propeller and took off in pursuit.

It being a beautiful SUMMAR day, visibility was good, and she could see the villain racing down the road in his ROLLEICORD. Taking EXAKTA aim, she let fly with a tank of hypo, which burst in front of the car clogging the works. Berghiel and Dollina were overcome.

Landing quickly she raced over and carried DOLLINA to the plane. "Take it EASEL, kid," said ZEISS. "Everything is WELTI that ends well, my little BANTAM." SQUEEGEEING each other, they climbed back into the plane and flew back to Leica and Robot. Said Leica to Robot, as they returned to the ranch house, "its Plaubel that Graflex had something to do with this."

Let's make a Memo of it.

LLOYD HARRISON.

Los Angeles, Cal.

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Ask for helpful new booklet, "Tips on Better Child Pictures," by Ruth A. Nichols, noted child photographer. Get it at your dealer's or write General Electric, Schenectady, N. Y.

**GENERAL ELECTRIC**



● **BIG SHOT** outfits like Technicolor, et al, spend millions each year on research. Yet, it takes some clever amateur to pop up with the right idea. And one of the brightest ideas to burst upon our horizon in a long while comes from E. J. Chapman, local aircraft worker. It may turn out to be the answer to the color fan's prayer.

Chapman has a method of sensitizing ordinary bromide projection paper for printing Kodachrome transparencies. It is a one-shot method, he says, and all you have to do is place a slide in your enlarger, project it on the prepared paper as though you were printing a black and white print and run it through a series of baths to complete a full-color print.

The process is by no means perfected, but the practical application of this idea will if realized, just about do to black and white what the gasoline engine has done to the horse and buggy. We hope to have more dope on this in the near future. Chapman shows that the greatest photographic scientist is no smarter than any of us amateurs. That's what makes photographic life fascinating.

● **RECOMMENDED** for the Hall of Shame: Those whisperers who keep alive the canard that one of our most reputable film and paper manufacturers is Nazi-controlled . . . Arm-chair photographers who talk a swell picture . . . The guy who shoots a 35 mm., makes a fuzzy 11x14 and then claims it was made on a 4x5 negative . . . his twin who attempts to justify a lousy print with claims to "composition" . . . the "Scotch" movie fan who gets just what he deserves when he shoots cheap positive cine film in place of negative and his subjects look like they'd been dipped in ink . . . and last, but by no means least, the bird who invented film numbers and sizes, a refugee from an asylum since few will enlarge without wasting some valuable part of a carefully planned negative.

● **CHARLES CHAPLIN** is probably one of Hollywood's greatest photographers. He's a one-man show when he's making a picture. He runs the works single-handed, from getting the original idea, writing it, designing the sets, casting, directing, shooting and editing. Anyone of these is a tremendous job.

In photography he has developed a special technique. Look at any scene and you can instantly identify it as Chaplin's. Although he has some big camera name actually handling the camera while he acts and directs, Chaplin decides how that handling is to be done. He goes for full exposure, right into the shadows, and favors contrasty print-

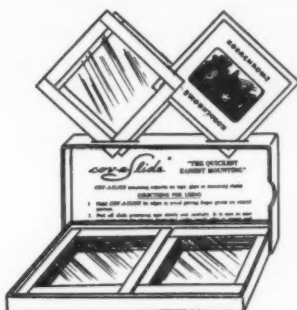
ing on the theory that this is easiest on the eyes. He deftly avoids trick shots, believing that they do not progress the story, and there is a minimum of camera movement, many less capable directors attempting to inject pace in a slow story by rushing the camera about.

He will work at least two years on a single picture and will take weeks to get a single scene which in the end he may discard. This would be ruinously expensive to any other company and accounts for the fact that his productions cost as high as two millions each. Yet, no pictures have the world gross that his have, reaching an incredible fourteen millions. Hollywood, the land of light whines and jeers, holds its hat in its hand and calls him a genius. That's the highest praise obtainable when we remember that a prophet is not without honor save in his own country.

● LEW AYRES has a way of making prints transparent in working on them as paper negatives. The trick is to make a solution of one part tris-cresyl phosphate, one part benzene, one-half part acetone, swabbing the print with this solution and allowing it to dry . . . Mischa Auer will tell anybody that he's miserable because he's being kept so busy he hasn't time to exercise his pet Rollei-cord . . . What cheap electric print dryer was yanked off the market recently. Underwriters were shocked at the number of people it shocked . . . A certain hair-brained young actress suggests radium dipped sand in an hour glass for tray developing pan film. Not so dumb at that . . . Wallace Beery is planning to have built for himself a special enlarger for his 35mm negatives (if ever he gets around to printing any.) He's enthusiastic about Varigam, doesn't like the idea of interposing the filters between lens and paper and will have his enlarger so constructed that the filters will slide into place before the light source.

● TYRONE POWER now swears by an Exakta and shoots Kodachrome almost exclusively . . . Preston Foster discovered a funny thing. Since the power of wetting agents such as "Aerosol" became known he's found that a terrifically effective wetting agent is, believe it or not, stale beer . . . Abem Finkel, one of Warner's top-flight scenarists, labels his developers "borscht." . . .

● RECOMMENDED for the Photographic Hall of Fame: Agfa's new fine-grain developer, Finex, which does all it's claimed to do . . . The Edgerton-Wabash experiments to perfect low-cost portable speed-lamp to take shots at 1/30,000 of a second . . . Eastman's voluntarily abandoning a ripe domestic market to supply the United States Government with photographic necessities, not waiting for priorities demands . . . Also EK's new glass which, comes the end of the War, will give us high-speed wide-angle lenses of perfect definition . . . The National Bureau of Standards Testing Charts for lens definition in last month's Minicam Photography . . . George Hurrell and John Hutchins for their ability to light a subject.



## The simplified way to protect your Kodachromes and transparencies

**It's quick • It's easy  
It's inexpensive**

This new invention eliminates the use of glass, tapes, clamps, mounting devices. COV-A-SLIDE is a clear transparency, banded with self sealing adhesive. You just press it on to your Kodachrome making an instant sealed contact but protects your film against scratches, fingerprints, dirt and dust. You can mount 20 slides in 10 minutes and a box of 40 COV-A-SLIDES (seals 20 Kodachromes) cost only \$1.

### How COV-A-SLIDE works

It's a clear, acetate film banded with self-sealing pressure adhesive and a protective cloth coating.

To use it requires only 3 quick steps:

1. Remove protective cloth from COV-A-SLIDE.
2. Place COV-A-SLIDE adhesive-side down, over film mount.
3. Rub finger over COV-A-SLIDE, pressing adhesive firmly into contact with mount, for instant seal.

Can also be used in Kodaslide Ready-Mount Changer if film is first mounted in this, properly prepared mount.

### AT YOUR DEALERS

*Willoughbys*

**110 WEST 32nd ST. N. Y.**

**World's Largest Camera Store**

**Built on Square Dealing**

**Established 1899**

# *Sweaters* ARE PHOTOGENIC!

BY VICTOR DE PALMA

VICTOR DE PALMA, one of Black Star's consistent breadwinners, sent us a lovely new print which he titled, presumably for the hell of it, "Sweaters Are Photogenic?" Since the photographic syndicates are stuffy in their choice of titles ("Dawn," "Spring" and "Harvest" being tacked on like so many rubber stamps) we suspected from the question mark that Victor had a quiet mad on.

"How did you make this lovely little number?" we asked.

"With a pin-hole camera and a pair of tweezers," came the answer collect.

We put the matter into the willing hands of our "Stanley, Get Your Man, Department," which he did.

Victor de Palma chose his ironic title as a protest against those photographers who believe that a "hold still" and a click does it. It's the photographer's technique, patience, and planning that makes sweaters or a big bass drum photogenic.

The first picture, Fig. 1, deserved to be discarded, de Palma says. "The slanting position of the girl is awkward and fails to give the effect that I was trying to suggest of outdoor early fall. The shadows across her face look like dirty streaks. The tree in the background throws emphasis to the left side of the picture, away from the subject.

"In the second shot, Fig. 2, the girl's



FIG. 1

body is clumsy. The open space between her left arm and body is filled with dark leaves, giving a cramped, bunchy effect. Even cropping the tree didn't remove the pine needles growing out of her hair.

"Finally we get away from the tree but, as you see in Fig. 3, pick up a few truckloads of unimportant detail. I tried to make the girl's hair windblown, but it is only untidy. The shadows on the left side of her face are too heavy.

"Fig. 4 is from the final negative. I had to flop the negative and trim it a little in order to get Fig. 5. The shadows and the hair and cheek were lightened by dodging.

"My intention was to get into one print all the elements of a beautiful day and a charming girl with windblown hair. It was made with a Rolleiflex on a sunny

FIG. 2



FIG. 3



FIG. 4





**LIFE** started something recently with a series of pictures of motion picture starlets in various types of fetching sweaters. Other magazines followed suit. The Hays office even was quoted as to types of sweaters which would and would not be subject to motion picture censorship. A picture of an outdoor girl can be attractive without necessarily being a sex-appeal vehicle.

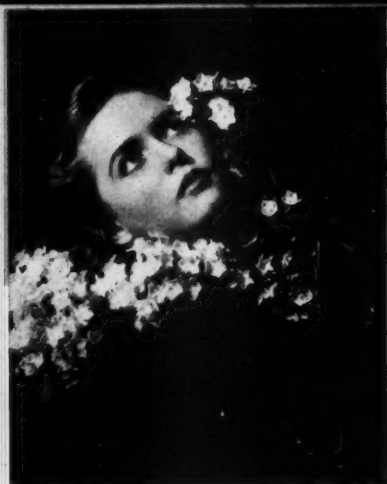
FIG. 5

day, on Agfa Superpan Supreme film, f11, 1/100 second.

"A session in the darkroom resulted in

discarding three negatives and making one finished print. Nothing is arbitrarily photogenic. The photographer makes it so."





ENTIRE negative FIG. 1  
FIRST composition. FIG. 2➔



THE "X" shows the interest centered. FIG. 3



THE triangle encloses main interest elements. FIG. 4

## 9 PICTURES

BY AVERY SLACK

**A**FTER YOU'VE TAKEN a good picture, what next? Do you just print it without actually investigating all its possibilities? Or do you try to break through and discover some of the unrealized effects and compositions that hide within the picture's borders?

Actually there are only three main ways in which the "straight" picture can be changed: (1) Trimming, (2) Swinging, and (3) Reversing (printing the negative with the emulsion side away from the paper).

The easiest way is to make two good prints of the entire negative, reversing one print. Then study these with a pair of L-shaped cardboards.

When composing a picture from which you hope to make many different compositions, it is a good idea to have the main interest near the center of a large X as in Fig. 3. If the eyes of the subject look away from the camera, it will be easy to create apparent changes of expression.

The original picture used to make these illustrations was





**FIRST** we swing our frame to make a vertical picture that cuts diagonally across the picture. The white lines show the part of the picture used to create this enlargement.



made indoors. Black velvet covered the arms and body. Sprigs of pale pink phlox were arranged around the head so that the whole effect was within a triangle, as shown in Fig. 4.

The entire original negative is shown in Fig. 1. Trimming as in Fig. 2 gives the best composition that still retains the effect origi-



# FROM 1 EXPOSURE

HOW TO GIVE NINE LIVES TO YOUR NEGATIVES

nally seen in the viewfinder. It's a pretty good result. But we're not satisfied. Let's give this picture a thorough going over and see what can be done with it in the illustrations that follow.



**WE** turn the negative over and select a nearly square area from the center. An intimate closeup effect results.





BACK to the original print, this time swinging the frame at the opposite angle to make a horizontal picture. Result is to create a more aloof expression as at left.



THE reversed print is used again. This time the square frame has to be tilted and opened to include more of the surroundings. The base for the head is a pleasing innovation (at left).



NOW our frame cuts a square picture from the unreversed print. The head is in the upper left corner, giving a new "lift" to the whole composition. Note that this effect (at left) was achieved without swinging the frame.





**WE USE** the long narrow panel to cut a vertical area from the unreversed print. The result, surprisingly enough, is a pleasing horizontal picture.



**ON THE** reversed print we apply the same narrow frame at a slight angle, and the result is another strikingly simple horizontal composition.



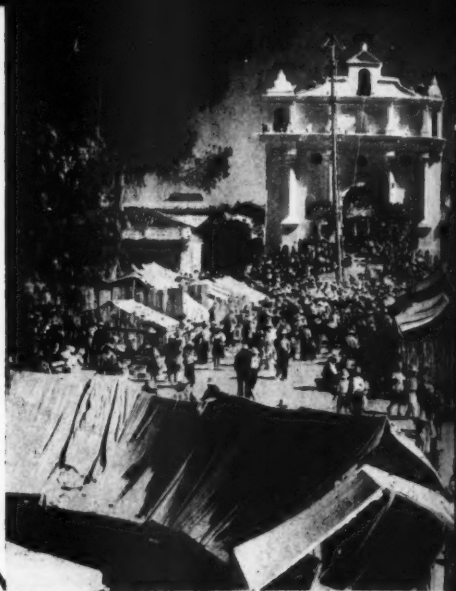
**FINALLY** we move the frame in for a genuine closeup. We find that the eyes, nose and mouth, although beautiful by themselves, do not create a satisfactory effect. The soft texture of the hair and the delicate pattern of the flowers are needed for a complete picture.





1. TO GET an accurate estimate of the area within range of the average camera, hold two fingers on the nose in this fashion. FIG. 1

By DMITRI O'ROURKE



## ● TAKE A LENS EYE VIEW



2. WITH TWO fingers held as above, close the right eye. With the left eye, make a note of a point in the scene, such as a tree or house, limiting how far you can see to the right. FIG. 2



3. THEN view the scene with the right eye. FIG. 3

**C**OMPOSITION without a viewfinder! Paradoxical though it may sound, it is not only practical, but also advisable. It is unexcelled for candid shooting, where the camera is advisably kept hidden until the appearance of the correct moment for clicking the shutter.

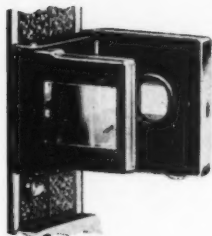
It also is something to conjure with when traveling or just looking for likable scenes. It helps to visualize subjects in terms of pictures. It gives you a lens-eye view of a passing panorama, telling you when a scene is a dud, pictorially speaking, or when it warrants bringing your camera out of its carrying case.

The system is simplicity itself. It begins with the theory that if some object is placed between the eyes, the field of vision is limited in proportion to the size of the object. It is as handy as, well, a hand. It amounts to laying one finger—or more as need requires—along your nose. Nothing more. If you can keep your thumb under control—resisting the entirely human impulse to put it to your nose—the system is not only a cinch—it's safe, too.

Here's how:

Fig. 1. Hold your first two fingers as shown.

Fig. 2 How far to the RIGHT can you see with your LEFT eye?



LOOKING at scenes through a viewfinder, even when not taking pictures, is good exercise in composition. It helps you realize that everything the eye sees does not get into the picture. The finger-tip method is simplicity itself, and a fine exercise for the eye, visualizing pictures even when the camera is at home.

## OF THE PICTURE

Fig. 3. And how far to your LEFT can you see with your RIGHT eye?

The horizontal area you can see (with two fingers, it's about 45 degrees) is the same as that covered by a horizontally-held miniature camera with the usual 2-inch lens, such as the Argus, Contax, Leica, Perflex, etc. It shows the area of the long side of the picture,



A lesser area is covered by the small dimensions of the picture, with the camera held on its side, the angle of view is about 30°. To measure this angle, use four fingers, as in Fig. 4.

The two-finger position measures the angle of view of many cameras, including square format cameras such as the Argoflex, Rolleiflex, etc.

This method can be used to estimate the angle of view of any camera. If your fingers are large or eyes deep-set, you may use one less finger than indicated here.

You can quickly check your own camera's horizontal and vertical angles of view. Setting up the camera opposite a wall or fence, it is a simple matter to check how many fingers are required to see what your camera sees.

Then you can compose your picture in advance. You can determine picture possibilities well before you reach for your camera, and then shoot quickly.



FOUR FINGER position measures short side of a standard 35mm. camera picture. FIG. 4



USING just the index finger measures angle for a view camera such as the Re-comar. FIG. 5



THREE FINGER position measures angle for the short side of a box camera picture. FIG. 6



CINE shots are shown by six-finger position. FIG. 7

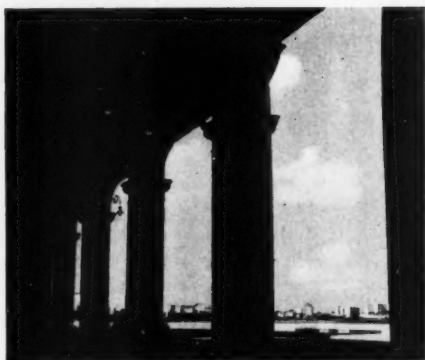
# What Shape?

HORIZONTAL

VERTICAL

OR SQUARE?

BY BERNARD G. SILBERSTEIN



THIS subject makes a poor horizontal print because the heavy dark mass on the left throws the composition out of balance and the feeling of height in the stone columns is lost.



A SQUARE picture improves the geometric balance but does little to improve the interest.

**W**HAT SHAPE" is a question no one would dare ask in the early days of photography. Pictures came back from the drugstore in neat little rectangles, and it was heresy to think of them in any other form.

Portrait studios played with ovals, circles, vignettes and irregular vignettes, but snapshotters stuck loyally to neat little rectangles, preserving every precious square inch of picture detail.

One day, someone found that the excellence of a picture depends not only on what is included in a picture but also on what is left out. When he proceeded to trim, lo and behold, he found that the entire mood of a composition could be changed by making a vertical picture horizontal, or a horizontal one square.

The square shape, a photographic stepchild, was discovered. Now, no one makes a final print without first deciding what shape it is to be. The best time to do this is before snapping the shutter.

Some subjects almost pick their own picture shape.

(1) Vertical picture areas express upward or downward movement, such as aspiration and oppression, the soaring windows of a skyscraper or the bottomless depth of a mine shaft fit this shape.

(2) Horizontal areas express balance,

**"HAVANA."** Trimming to a vertical composition emphasizes the height of the columns and contrasts them with the tiny buildings clustered on the horizon.





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**"SUNBURST"** requires a square format because of the shape of the arch. Adding more of the dark arch either at the top or the bottom, as shown by the small illustrations at the bottom of the opposite page, only detracts from the center of interest.

peace and relaxation. Landscapes, broad expanses of sea and sky, reclining figures, and quiet street scenes fit this shape.

(3) Square areas are best suited to pattern pictures, especially where elements are repeated a number of times.

Don't be confused by the many excep-

tions to these general rules. Exercise your privilege of making any exception you find interesting. Only when in doubt, adhere to these rules and your subject will fit the picture shape you use. For representative horizontal and vertical pictures, turn the page.



**"MAGIC WINDOW"** adapts itself immediately to the square because of the round window. Note how cleverly the picture is subdivided, in the center, by the bars framing the almost square picture of the distant domed towers.



**BOTH horizontal panel (above) and vertical panel (right) do not suit circular picture.**



**THE EYE** enters any picture most easily from the lower left. This is facilitated here by the white corner and the implied motion of the walking woman. The zig-zag shadow also

draws the eye from the left toward the center of the picture. These factors decide that "Side Street in Chichi, Guatemala" should be a horizontal print, trimmed as shown above.



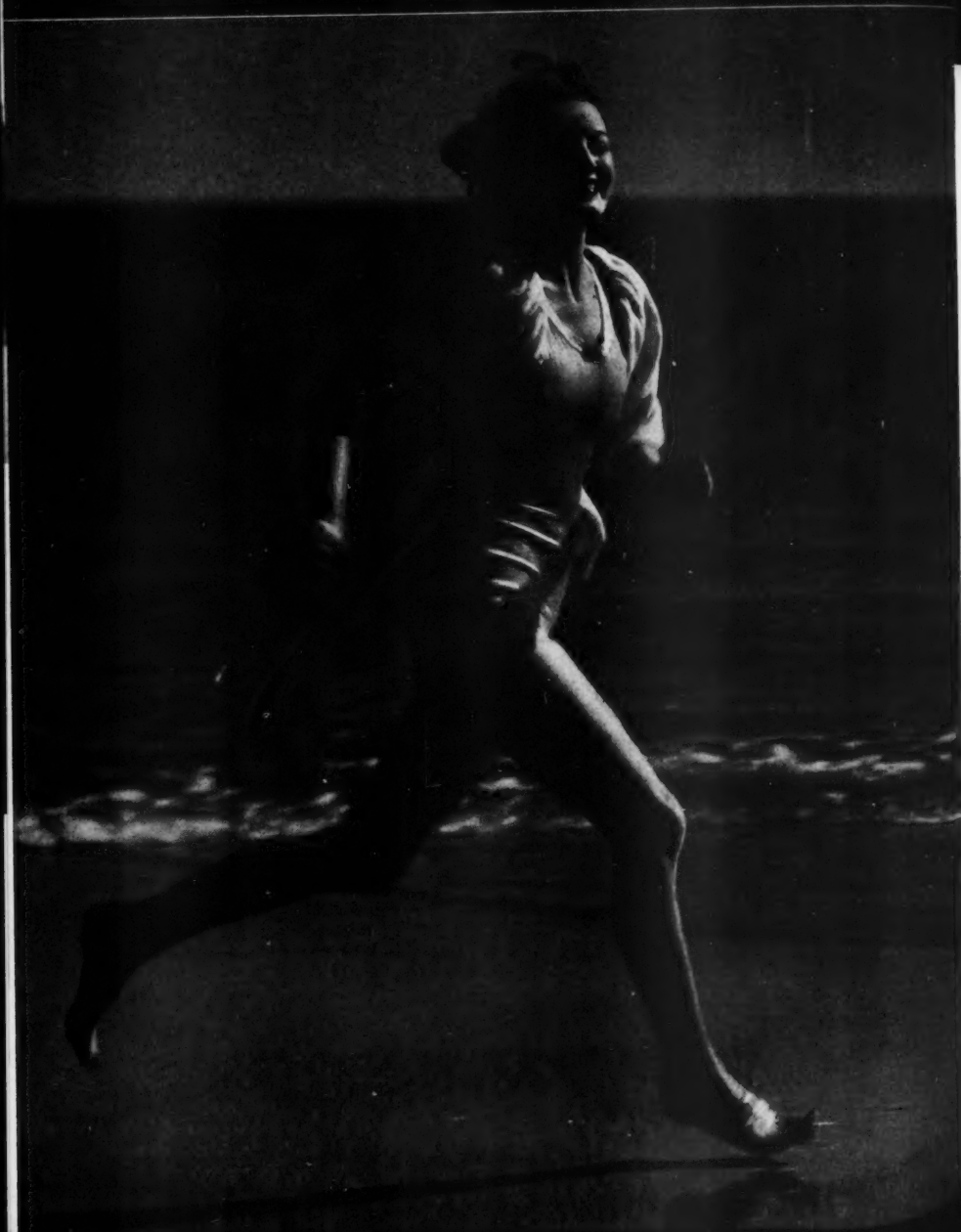
A **VERTICAL** print only adds superfluous foreground (left). The square (above) is not bad, as the street's perspective creates a triangular form that sometimes fits well into it.



THE EFFECT of sunlit water and clouds contrasted with the huge dark hull of a vessel home from the sea unquestionably requires the vertical picture shape. There would be no room for the graceful curve of the hull across

the sun, no room for the long, lazy pattern of light on the water beside the ship, if this picture were horizontal or square. This is an excellent example of the type of shot that "selects" its own appropriate picture shape.

**MUNKACSI... EISEN.**





# STAEDT... KEPPLER

THEY ALSO *Chose* PHOTOGRAPHY — BY *Accident!*

BY ROBERT W. MARKS

THE most successful of today's photographers seem invariably to have reached the heights by photography's "hard way"—which is to say by starting to do something else. The curious twist of fate that throws them into the field of picture-making is something almost too vague and elusive to lend itself to a formula. Take, for example, the cases of two European pioneers in reportage, Munkacsi and Eisenstaedt; or of one of today's ace color men, Victor Keppler. Here you have, in one lump, a writer, a department store man, and a would-be lawyer. Why did they become photographers?

Take the case of the suave, cynical Munkacsi, who is properly the father of modern, glamor-on-the-wing fashion photography: Munkacsi was a newspaper reporter. And before that, he was a picker of hops, a cracker of walnuts, and a manipulator of the many things a man often has to manipulate in order to survive in this most haphazard of all haphazard worlds.

It all goes back to a little village in Hungary called Dicso-Szent-Marton, where Hungary boarded out its lunatics. Here, Munkacsi was born.

There was an epidemic of poverty in Dicso-Szent-Marton. For years, little Munkacsi hobbled through the village in a cast-off pair of his mother's high-heeled shoes. "My father," he said, "could have been a dictator, because by birth he was a house-painter; he lacked, though, a very necessary qualification, he was honest. That's why I had to wear my mother's shoes."

The hope of the village was natural gas. Every man who owned a piece of land, believed that sooner or later gas would spurt up under his hearth. Munkacsi's father said to him, "Son, as soon as we hit gas, I'll buy you a suit of your own."

Munkacsi said, "I waited ten years for that new suit, and on my eleventh birthday, when there was still no gas and no suit, I ran away."

For years, he wandered around from village to village, taking odd jobs. At night, he slept in any packing box that happened to be handy. Meanwhile, he wrote verse.

● EDUCATED by rule of pillar and post, and a scholarly study of billboards, Munkacsi found himself in time, a reporter on the Budapest newspaper known as *Az Est*. Here, he worked hard and long, preparing to become a kind of Hungarian Winchell. Only one thing saved him: a murder.

It seems that Munkacsi had been taking pictures for some time, on the side. Photography was one of his minor hobbies. And one day, leaving for a vacation, he took a small camera with him for pictorial work. While waiting for his train, he noticed an old man fighting with a soldier. This seemed of no particular moment, as southern European soldiers often beat up old men—if and when they were in the mood. Nevertheless, as a matter of routine, Munkacsi unfolded his camera and took a shot. This was the kind of shot we have since come to call "documentary photography"—and wins prizes for the W. P. A.

A few weeks later, when Munkacsi re-

turned to Budapest, the town was in an uproar. Murder was on trial. "Dog bites man," was the order of the day, and the soldier was dead. The old man had done his work with a knife, and pleaded self-defense.

Munkacsi suddenly remembered his picture — as yet undeveloped. Quickly, he dashed to the darkroom. In high haste and excitement, he took out the roll, plunged it in the "soup". Slowly, the image came out—and there, in black and white, was the thin thread on which the old man's life hung. Unmistakably, there was the soldier's hand holding a pistol. The old man, beyond the shadow of a doubt, was fighting for his life.

Over-night, Munkacsi was famous. He was the talk of Transylvania. The picture went on trial; the old man was free.

A sudden call came from the editor's office. "Munkacsi," the editor said, "you are now our star photographer. Forget about writing."

Munkacsi has always been imaginative, skeptical, and keen as the point of a scalpel. When an editor asked him to photograph his actress-wife, and travel out to his summer home to do it, Munkacsi did it. But, when Munkacsi turned in an expense account coming to exactly three pengoes, sixty fillers (\$3.54, pre-war exchange); the editor said, "we'll just shave off the sixty fillers."

Munkacsi answered, "Don't strain yourself—I'll even return you the three pengoes." The next day, he figured the number of advertising lines that can be bought

in *Az Est* for three pengoes, and used it for the following ad: "All furniture in a three-room apartment for sale."

He paid for the space with his three pengoes, sent the receipt to the publisher, with a note saying in choicest Hungarian, "I have no desire to remain in a country where editors have to chisel for sixty fillers." With this off his chest, he left for Berlin, where editors chiselled for higher stakes.

● IN GERMANY, Munkacsi came into his own, developing the kind of photographic reportage which was later introduced into this country by the pictorial magazines.

He travelled around the world in search of high adventure and good pictures. He shot most of the celebrities of Europe and Asia Minor. He went hither and yon on the ill-fated Graf Zeppelin. He had a leg half-chewed off by a crocodile, in Brazil. He discovered, in Central America, the famous Zora Agha, the 128-year old man with a name like a laxative.

Then came the time for *Heil* and farewell. One newly-Nazified Christmas, Munkacsi was assigned to a job of photographing fruit. He made some twenty excellent shots. The editor of the *Berliner Illustrierte*, for which the pictures were intended, looked them over carefully, and threw five back. "These are bananas," the editor said.

Munkacsi agreed; he knew his fruit.

"Bananas," said the editor, "are not Aryan."

Munkacsi then delivered an oration. "I can stay in a country," he said, "where they kill thousands of innocent people—but I can't stay in a country where the shape of a fruit can hurt the eyes of a nation." And with this swan song, he came to America.

● ONCE in this country, Munkacsi set about revolutionizing the technique of fashion photography. He shot his opening gun on a certain freezing day in December, 1933, when he took Mrs. James Bishop and Miss Lucille Brokaw, put them in abbreviated bathing suits on an icy



**MARTIN MUNKACSI** originated modern glamour - on the wing fashion photography.



**RAIN-SLICK** streets and their reflections always fascinated Munkacsi. In his native Hungary, he always carried a small camera. He delighted in pictorial

scenes and in the kind of record shots that are now called "documentary" photographs. He soon learned, however, that such pictures buttered no potatoes.



**ALFRED EISENSTAEDT** is one of the pioneers in minicam reportage. While selling buttons, he "clicked."

**HE IS** a news photographer, par excellence, whose work is seen regularly in *LIFE*. His shots are not so much beautiful pictures for picture's sake as pictures that do a reporting job, such as this shot showing a demonstration of a 1,000,000-volt flash of man-made lightning.



beach, and started them running. Looking into the ground glass of his Adam reflex camera, he clicked. And this shot, published in *Harper's Bazaar*, was the beginning of today's trend for action, drama, naturalized excitement in the field of styles and women.

Almost always using a large-size reflex camera and old-fashioned glass plates and making his enlargements from small sections of the plates—usually while they are still wet—Munkacsi brought a newspaperman's technique into the frou-frou world of fashion.

He, more than anyone else, developed and popularized the odd angle technique, shooting up at glamour and down on beauty. He contrasted pretty-pretty subjects with things strange, exotic, and bizarre. His pictures were vibrant, alive, compelling in interest.

A little contemptuous of the world in general, and his contemporaries in particular, he turned a dull field into a pageant.

**A**NOTHER EUROPEAN who started life about as far away from photography as a man can start, is Alfred Eisenstaedt. Eisenstaedt was a button salesman.

Born in Dirschau, West Prussia, where his father had a department store, Eisenstaedt, in his early years handled nothing more complex than a Brownie; his whole concern with photography began and ended there.

At sixteen, he went to work in a department store in Gera, Thuringia. A year later, he was conscripted into the German army.

On April 12, 1918, a piece of shrapnel passed through both of his legs, and one of the Kaiser's surgeons pleasantly offered to amputate them. Eisenstaedt thanked him very much, but kept his legs. After the war Eisenstaedt found himself limping around in search of the few jobs that weren't there. Finally, his great chance came: he went to work selling buttons.

● ONE DAY, by the same kind of coincidence that seems to have affected Munkacs, Eisenstaedt took a vacation. And he, too, took along his little camera. Eisenstaedt, however, instead of shooting men in fights, shot quiet, gossamer things—like spider webs and dew on the grass. Returning from his trip, he showed these to the editor of a German photographic journal. The editor offered to print them. Aimlessly and soberly, Eisenstaedt said, "What do you think the chances are of selling pictures?"

The editor said, "Why not try a few magazines and see?"

Quickly, Eisenstaedt rushed home and gathered up his spare prints. To his amazement, the editor made a selection and plunked out cold cash. Now inspired, Eisenstaedt asked, "Do you think I can make any money with photography?"

The editor said, "You can make a fortune."

On fire, Eisenstaedt saved his money, invested in the best equipment German marks could buy, and turned out quantities of salable, "beautiful, dull pictures."

For a long while, he free lanced. Then one day, in the offices of the *Berliner Illustrierte Zeitung*—where Munkacs also worked—he met Leon Daniel, manager of the continental office of the Associated Press. And the upshot of this meeting was that on December 3, 1929, Eisenstaedt began touring the world for the German branch of the A. P.

He bought himself a Zeiss Ermanox—the high speed miniature camera, which preceded the Leica. And with this, he began sensational indoor candid shots of the kind Dr. Erich Salomon had become famous with, during the hopeful days of the League of Nations.

His first assignment, was an unexpected affair. The A. P. photographer who was supposed to cover the Nobel Prize ceremonies in Stockholm, took sick. In the emergency, Daniel took a chance on Eisenstaedt.

Eisenstaedt's work was so good, that in short order he was packed off on safari to

Ethiopia, to gun for Haile Selassie. In short order, he was practically living with the crowned heads of Europe, and ducking with them each time an assassin took a pot shot.

He did candid studies of Mussolini and Dollfuss, Hitler and Schuschnigg, Litvinoff, Eden, Beck, Goebbels, Barthou, Titulescu, and others of this ilk. So many of his subjects were marked for an early death, that Eisenstaedt worked practically arm in arm with the grim reaper; and it is hardly an exaggeration to say that his "morgue" has two meanings.

Working almost entirely with miniature cameras, he rushed out most of his work in the bathrooms of hotels.

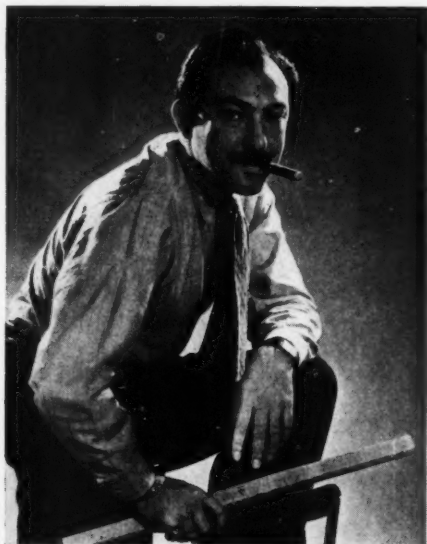
When Europe started flaming, Eisenstaedt headed for America and "Life". Or, as he puts it, with a trace of understatement, "I saw no chance for real work in Europe."

**I**N direct contrast to the success stories of Munkacs and Eisenstaedt, is that of the ace color photographer, Victor Keppler, a man who became a photographer by plan. "My old man," said Keppler, "wanted me to be a doctor. But one day, in biology class, I had to dissect a cat. That ended medicine—also my stomach."

Keppler is one of the few popular American photographers to be born in America. He is also that rare bird, a New Yorker born in New York.

At a time when most American youngsters would be advancing in the Boy Scout Movement, Keppler, with a partner still in socks, opened a developing and printing business. Meanwhile, with a \$1.98 box camera, obtained through brilliant trading with a nearby hockshop, he shot anything and everything that came in front of his lens. One of his earliest pictures was of the Flat-Iron Building falling over backwards. "Today," he said, "that would be a great picture. They would call it *Surrealism*." But in those unenlightened days, people could think only of saying, "It's falling over backwards."





**VICTOR KEPPLER** is the exception that proves the rule associating artistry with temperament. In this respect, his competence and matter-of-fact approach have had a hygienic effect on the whole photography field. He looks—and works—like Groucho Marx.

"Give us a pretty girl on a beach," said the advertising agency for Walkover Shoes. Keppler did it in the studio. Unlike Munkacsi, who shoots outdoors, wherever possible, Keppler prefers working indoors away from weather's whims, where lighting and other details always may be controlled with accuracy.

Nevertheless, Keppler went ahead, taking pictures of everything, with everything. One picture, made with a pinhole camera, won a prize of \$1000 and made his enthusiasm spurt like a geyser.

In spite of this, somehow or other, he found himself studying law. But the fragrance of fresh developer and acid hypo never left his nostrils; and law died still-born.

● A WANT-AD offering a \$10 a week job with a Japanese photographer, lured Keppler far from the cloisters of the law school. And soon, Keppler found himself taking the pictures, sweeping the floor, and cooking the Suki-yaki for his master.

Time passed. Keppler took another leap in the direction of his goal. He played local politics, and became a finger-



"ACCIDENT" is the element ruled out in Keppler's approach to "perfect technique perfectly executed." No wonder he swore when a fly alighted just as the shutter was pressed. It meant a retake. The pic-

ture was for Topping and Lloyd advertising agency's client, National Eagle Whiskey. But when the prints were examined, the retakes became discards; the "accidental" shot, with the fly, was accepted.

print photographer, snapping thousands of fingers in the hands of the law.

Now, it so happened that a certain politician, patterning himself on the model of Teddy Roosevelt, decided, one day, to collect stuffed animals. He approached the heavily-moustached Keppler, possibly with stuffing in the back part of his mind. Outwardly, however, all he said was, "How about shooting my collection?"

"All I can take," Keppler said, "with my present equipment, is their fingerprints." But, as the man wanted full, Museum of Natural History studies, an agreement was struck, and the man invested in full studio equipment for Keppler. Again, Keppler's drive got under way, and again, he shot anything and everything, this time on 8x10 plates. When he was through, he not only had a pros-

pectus for a museum, but an impressive set of commercial samples.

Months of pavement-pounding followed, with the usual discouragement. He sat so long in most of the offices that the cleaning women took him for part of the set-up. He became a perpetual thorn in art directors' sides—a professional nuisance with a never-say-die quality that is best appreciated in retrospect.

Horatio Alger, these men felt, was all very well in his place; but the place isn't here. One art director, in an effort to get rid of him, said, "Bring me in a shot showing spinach in a white saucer, on a white plate, on a white cloth—and make it so good that the customer's mouth will water."

Keppler stayed up all night, made shot after shot, and by the next morning, even



**EISENSTAEDT** would have executed the assignment for this picture as a candid shot, "ECLIPSE," taken perhaps on Times Square. Keppler assembled the crowd in his studio. Note the diversity of types, people old and young, in the cast. Faces

run the gamut of expression from boredom to open-mouthed amazement. A candid shot of so great a number of people could have been better, but it would have depended on a certain amount of luck.

his mouth was watering.

When he presented the prints, the director was embarrassed. "It's all a joke," he said, "I didn't think you could do it."

Keppler was ready to take his spinach and do a Popeye. The agency's man beat him to it with a twinge of something or other. "I'll try and make it up to you," he said, "here is a real order."

With this concrete bait, Keppler took four hundred dollars he had saved up, said "goodbye to fingerprints," and opened what he called a "collapsible" studio.

Keppler maintains that the place was genuinely "collapsible." At night everything folded up; the darkroom became a bathroom, the floodlights became reading lamps, the tripods bunks.

In the interim, Keppler worked as few

men have worked since the building of the Pyramids. He shot, shot, shot; experimenting with everything he could think of experimenting with, from rhythmic designs to color. The business grew, and every nickel above food went back into equipment and supplies.

He made himself so proficient at so many phases of his work, that he built himself a reputation as a kind of Canadian Mountie in the field: always bringing back his quarry. His ingenuity was only outstripped by his drive.

Today, an outstanding color man, he is one of the few men in his class who still takes pictures for exercise, shooting what he thinks other people won't, and shooting it when he thinks other people won't. And if and when he gets what he wants, noth-

ing else matters; he would just as leave walk into the most exclusive client-executive meeting in his undershirt, with a two-days' beard, and smoking his habitual

cigar under his Groucho-Marx-mustache. The only thing he cares about is being able to say with a sure, steady, satisfied voice: "Gentlemen, here are your pictures."





1/25 second. FIG. 1

WATER has a primeval fascination. Our earliest ancestors could not escape it. Today, a photographer can spend a lifetime filming a single drop of liquid, let alone the majesty of a miniature Niagara. By varying the shutter speed, effects are obtainable varying from that of a bridal veil (Fig. 1) to a batch of beaten egg white (Fig. 4).

## WHAT SHUTTER SPEED?

B Y D A L E V I N C E N T



1/100  
FIG. 2

1/200 second. FIG. 3

THESE PICTURES all were taken from the same point, at about 75 feet. From a greater distance, the same effect would be obtained with slightly slower shutter speeds. Closeup would require faster speeds. The details of the flowing water and flying spray show where a slow or fast shutter was used. This shot, at 1/200 is the best one.



1/800  
FIG. 4





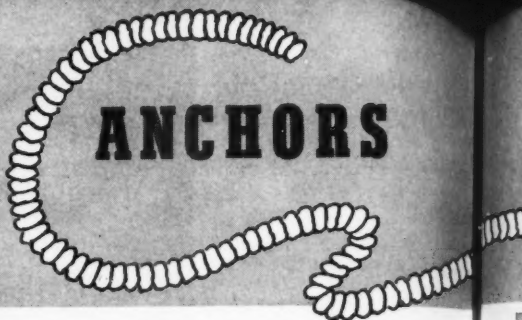
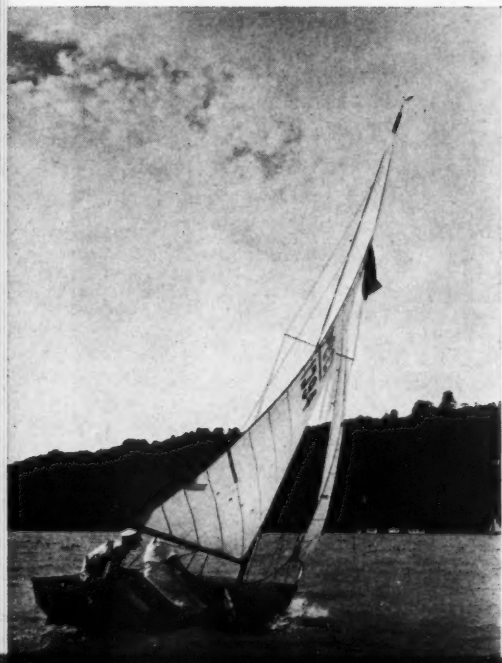
**"WHEN good fellows get together."**

**G**REAT sailboat pictures are elusive. Their common heritage is a will-o-the-wisp viewfinder impression of speed and grace and white canvas against a blue sky.

As soon as you press the shutter, however, things begin to happen. The sky and the sail turn the same color, the water loses movement, and the hull its grace.

Against this wretched conspiracy—and

**BEST ANGLE** for approaching or receding boat is at about 45 degrees. Taken from the lee quarter on the starboard side, this shot reveals every part of the boat. The ensign is flying and the class registration number is plainly seen. Hazy, late afternoon sunlight. Super XX film, yellow filter 1/1000 second, f16.



**By DICK FLERLAGE**

who hasn't cursed the perversity of inanimate things—I have a cure. With or without white flannels it slays a few of the devils that lie in wait for the ebullient camera fan with a light step, and a song in his heart, who trots down to the water with a camera.

It is a tradition among camera magazines to say that a good camera can handle any job, but in photographing sailboats, a lot of good cameras come to grief. I favor a twin-lens reflex; mine is a 1A Rolleicord. The 2¼x2¼-inch negative allows a good enlargement, and the reflex feature is practically indispensable to my way of working.

Boating action is fast and good pictures wait for no one, which is why cameras using sheet film or plates belong on the beach. Try wrapping yourself around a stay on a small pitching sailboat, where holding on is a matter of two hands and even a strong bite. That's when you thank your stars for the automatic film transport, so you can shoot in succession without having to look into a red or green film window.

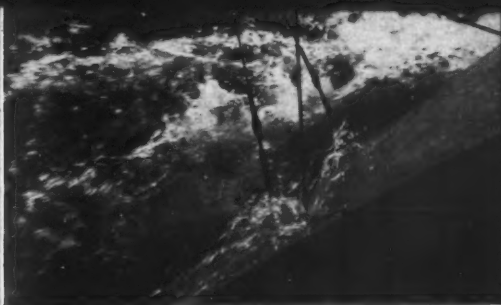
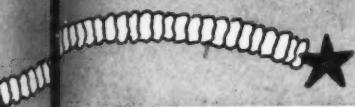
#### **Accessories**

The trick in sailboat photography is to preserve the feeling of a flyweight skimming along at lightning speed, to capture the grace of a turbulent wind bellying a



**EVEN SMALL** boats offer good possibilities for inboard pictures. Here, the sails offer a natural frame. The high camera angle keeps the shoreline out of view and gives a water background. Super XX film, yellow filter, (K2). 1/100 second, f16.

**AWEIGH!**



fine, young sail. The eternal anomaly of a closeup that gives, not another picture, but a different one, is the hazard of sailboat photography.

Unless you use a telephoto lens, a sailboat at forty yards, that is, anything smaller than the yacht the admiral gave his daughter, comes out like a lost piece of gray paper on a spacious watery base. And when you clamber aboard some colorful gay bit of a ship that was feathering along in a breeze, you find ropes, sail, people, and chairs in your way, and no over-all perspective.

The only accessories I find necessary are a lens shade and a filter, such as a Wrattan K2 or G. I always loop a tight cord around my equipment and tie it to myself; thus if we go down, we go down together. For dramatic shots, a red (A) filter creates a dark, black sky.

### Choice of Film

I use panchromatic film, such as Agfa Superpan Press or Eastman Super XX, usually at 1/125 second f16, with a filter. The small stop lets you take a series of shots of an approaching boat without bothering to focus. With a 35mm. camera, I use Finopan or Panatomic X film and an exposure of about 1/100 second at f8.

Most sailboats are predominantly white, from the white of a power boat hull to the sky-filling expanse and spotless canvas of a sailing vessel. If you want the whites to appear dazzling against a dark sky, use the orange (G) filter. This gives a little more of the dramatic contrast than with the yellow (K2) filter. With the lighting at an angle to the subject, but mainly from the front, beautiful gradations from dazzling white to dark gray then appear in a curved sail or hull. Angular backlighting lightens the sky and darkens the sails. For silhouettes, use backlighting, aiming toward the sun.

### Shutter Speed

But don't hide the camera when clouds roll up. Thundering skies and foam-flecked waves are the handmaidens of heavy weather and sea "atmosphere."

Exciting sailboat pictures must capture an element of conflict to tell a moving story. What better conflict is there than an angry clutching wave, a close threatening cloud, and a bit of a sail tossed perilously into the trough of a giant swell?

Sailboats don't require trigger shutter speed: 1/100 second is fast enough for most shots. However, to allow for the pitching of a small boat and also the cameraman's nervousness it is a good idea to increase shutter speed to 1/200 or 1/300 second whenever possible.

### Camera Angles

Racing boats can be stopped by panning the camera and following the subject. When doing so, try opening up the diaphragm a bit to throw the already blurred background out of focus. Frozen action, as we learned in the early 30's, lacks interest while a slight blur gives the illusion of motion, enhancing the picture.

Boats approaching or receding at about a forty-five-degree angle present the fullest photographic possibilities. Head-on, as well as broadside shots lack depth. The exception is a low-angle shot from water level, of the bow of an approaching high-speed craft, *a la* steam roller. The low angle increases the apparent height of the boat.

Don't attempt to compose the picture perfectly while taking it. Time wasted in doing this often results in a lost shot. Center the image on the frame. Allow about half the negative for the boat itself. Trimming and composing can be done while making the enlargement.

Shooting pictures of boats, and notice I mention only boats, is one of the times when the rule about "not getting it all in" doesn't apply. Good photos of vessels under way are good only when the entire boat is shown, so don't allow the after end of the craft to run off the negative.

→  
A BEAUTIFUL example of the proper use of a correcting filter, this shot of the aloft portion of the ship's rigging shows perfect separation between all of its parts and the sky. Leica camera, Elmar 35 mm. lens, Agfa Finopan film, yellow filter, 1/200 second, f9. By Ricardo Moncalvo.



Pictures taken inboard, however, with interest centered on some one part or operation require fidelity to the Original Daisy Picking Rule: viz, if you put every daisy in the meadow in your basket, you'll need a truck to get home. On inboard pictures, eliminate the extraneous detail, and thus "point up" your center of interest.

So, brother Photographer, the next time your imaginary lookout calls "Sail Ho," grab your camera and run, don't walk, into a realm of photography that is as fascinating as it is beautiful.

In the meantime, here are some pointers learned in the school of hard knocks, and also some market hints for those who like to earn the price of some new camera or darkroom accessories:

### SHIPSIDE DO'S AND DON'TS

*Don't have a lot of cumbersome, bulky equipment. The average boat places a premium on space which doesn't allow large cameras or a host of extra accessories.*

*Don't place too much faith in plateholders—they fog easily on craft having limited shelter and are a nuisance to keep track of and change. Use filmpack or rollfilm.*

*Don't try to get good shots on a rough day from a small boat unless your camera is*

*equipped with a 1/300 second shutter speed or faster, lest the movement of the boat on the water in relation to other objects results in blurred negatives.*

*Don't sell pictures of a boat without the owner's permission. Don't sell pictures for advertising unless accompanied with a release signed by each identifiable person in the picture.*

*Don't forget to take filters, at least a medium yellow one. A medium red filter is unexcelled for extremely dramatic effects while an orange filter will put that extra bit of "snap" into your prints with fleecy clouds and darkened water. In marine pictures, more than any other field, contrast is of the utmost importance.*

### Some Do's

*Be courteous. A simple explanation of what you intend doing will often get access to yacht clubs otherwise closed to the public.*

*Insure your equipment. For 2 per cent of its value, your camera and accessories can be insured against loss by going overboard or getting soaked by spray. It is very comfortable to know the loss is covered when the sunshade or filter drops over the rail. I know. I've had the feeling.*

*Remember, the promise of a free copy of the prize shot will often get cooperation which otherwise wouldn't be forthcoming. When using a tripod on board a boat, be sure it has rubber caps on the leg ends to prevent marring varnished decks. For the same reason, always wear soft-soled shoes on board any boat.*

*Now, for the selling hints on the next page.*



THE PRINT (left) was trimmed to eliminate the sail seen here. Rolleicord, Super XX film, yellow filter, 1/200 second, f/11.



"AT THE TILLER." Taken aboard a 16-foot Comet class sloop, this portrait uses strong sidelighting plus reflections from the sail onto the face.





**SUNLIGHTING** from the side makes for texture in closeups. By Ralph Leone, from Rockefeller Center Camera Club Exhibition.

## MARKETS FOR MARINE SHOTS

1. Rotogravure sections of local papers (up to \$3.00 each) use marine pictures on the pictorial side as well as series which tell a complete story.

2. The owner of a boat and his guests are customers for prints. The accepted price for an 8x10 print on double weight matte stock is about \$1.00. Remuneration is much higher on photos taken on order.

3. Boating magazines (about \$3.00 each) use pictures of the newest types of boats in your vicinity each year. They also are a good market for news coverage of important regattas, power boat races, etc. Illustrations for articles dealing with cruising on waters of interest to large groups of yachtsmen are also acceptable. In many cases, the pay for photos is increased if they are accompanied by captions.

4. Handicraft magazines are always in the

market for pictures of new and unusual types of boats or gadgets and inventions pertaining to boating. Pay varies greatly.

5. Manufacturers of boats, fittings, hardware, sails, paints, etc., are always in the market for interesting photos of their products in action or use. Pictures of this sort should contain some human interest and not be just another picture of the item. The winner of an important race is of interest to the JOHN DOE COMPANY if a JOHN DOE MOTOR or JOHN DOE SAILS were used.

6. Local daily papers buy spot news shots of people of local prominence with their boats, race results, new boats in the area, and yacht club activities if the material is spiked with an unusual approach. Let your pictures pack a wallop and you'll find newspaper editors will welcome contributions, rewarding you well for your work.



# *Background* EFFECTS

## SIMPLE DODGING VARIES BACKGROUNDS



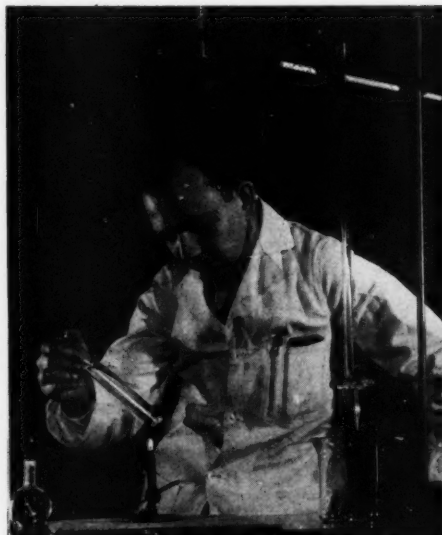
PAPER shape on glass above easel creates background. FIG. 1

**A**N ENDLESS VARIETY of unusual and striking background effects can be introduced into almost any picture, or undesirable backgrounds entirely removed. This background control method is used without retouching or in any way changing the original negative. It is done by dodging while printing an enlargement.

The only extra materials needed are: (1) a sheet of high-grade window glass, without flaws or irregularities, (2) some heavy opaque paper, either white or light gray, (3) a pair of scissors, and (4) some books or other support to hold the glass above the easel, as in Fig. 1.

Fig. 2 shows the original picture. A spotlight beam across the background would help separate the model's dark hair from the surrounding area. Fig. 3 shows this effect. Other variations are illustrated in Figs. 4, 5 and 6. The method is the same in every instance:

The picture is composed on the easel in the usual way. The sheet of glass is then placed about seven or eight inches above the easel. Lay a sheet of



DARK background same as hair.



FIG. 2 LIGHT beam is dodged in.

FIG. 3

# TO ORDER

BY RAY KERSHNER

paper on the glass and outline the figure in pencil. The shape of the spotlight beam is also marked. Carefully cut out this shape. It is shown in use on the glass in Fig. 1.

To eliminate the background completely, use the entire cut-out section surrounding the figure.

Place this cut-out dodge on the glass sheet so that its outline coincides exactly with the image projected on the easel. Set a small weight on the dodge to keep it in position; insert the enlarging paper in the easel and print.

For more dramatic and unusual effects, as in Fig. 4, cut out parts of the dodge and reassemble them on the glass to produce skylight or similar effects.



THE skylight effect is introduced in the background with the same basic cut-out used for the effects shown below. The skylight frame was drawn on the dodge and these strips cut out. The remaining parts were placed in position on the glass sheet and the print made. FIG. 4

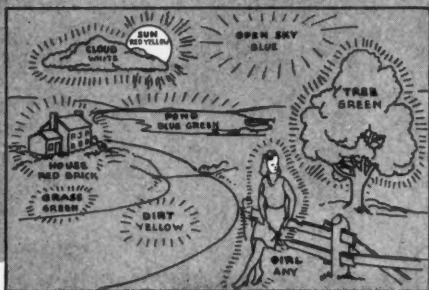


SIMPLE variations of the plain cut-out dodge include printing with the dodge in position for half the total time and then removing it. The upper corners are then burned in, using cupped hand or cardboard as dodger. FIG. 5



DODGE used for half the total exposure time produces light gray background. The head and the highlights on the left arm are separated from background but the result is less effective than Figs. 4 or 5. FIG. 6

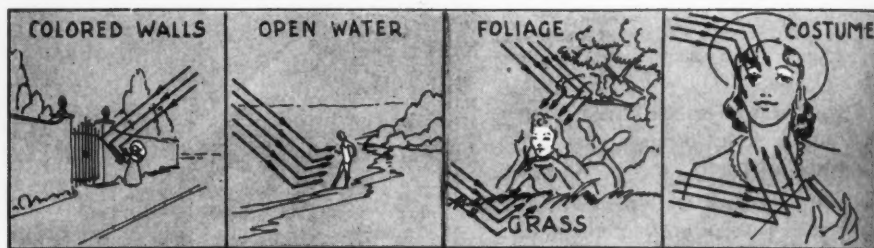
# Unseen



**NATURE** is a riot of color. The effect of many of these colors remains unnoticed until we try to discover what's wrong with a color picture, for example, of a girl next to a yellow road or a green tree.

FIG. 1

By **DON MOHLER**



Not white, but colored light is reflected by colored walls, water, foliage, etc.

FIG. 2

**"THERE'S** more there than meets the eye!" This saying goes double for subjects in color photography!

The eye estimates the amount of light on a subject and calls it bright or dark. An exposure meter can measure the amount of this light. But neither the eye nor the exposure meter tells the color of the light or of its reflections.

Illumination for pictures outdoors is of two kinds, direct and reflected. Direct light coming from the sun furnishes most of the illumination for color pictures. But some reflected light always is present. The sky itself acts as a huge reflector. And every surface of water, beach, road, building and even the subject's costume also acts as a reflector.

These reflectors seldom are pure white. When they have color, that's when color photography complications begin.

The color of the reflections is doubly important when pictures are taken in the shade, for all of the illumination then is reflected light, from sky, ground, vegeta-

tion and buildings around the subject.

If you will study some Kodachrome slides using a strip of white paper for color comparison, you will see here a tinge of red, there some yellow or other unforeseen color on a face, or on a white area. You didn't notice this tinge when the picture was taken. But now, in the slide, you can study the oddly colored area. You may find near it, a colored wall, costume or other surface as the source of the undesired reflection.

## Color Bleeding

The amount of this effect can be seen in advance. Before shooting, inspect the subject carefully, especially where two adjacent colors meet. The effect is called "color bleeding." One color seems to "leak" over to the next as if it is a flowing liquid.

The amount of color bleeding can be controlled by varying the size or distance of the reflecting surface. In Fig. 5, for example, the girl's costume could be moved closer or further away from the boy's face.

# COLORS CAN DISTORT YOUR PICTURES



**OBJECTIONABLE** tinges of color can be made tolerable by inclusion of the color source. The color that "misleads" the eye in a scene can also do so in the resultant photograph, if the color-



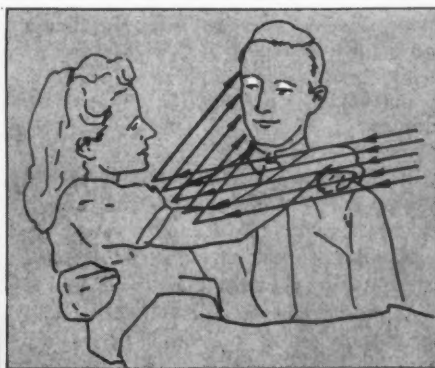
reflecting areas are included. Trim down the picture, eliminate the trees, and the greenish cast becomes inexplicable. Then we say that the color rendition of the picture is distorted. FIG. 3



**CORRECTION** can be obtained by "washing out" undesired reflections with a daylight (blue) flash lamp. The closer the lamp to the subject, the greater its effect as compared to the daylight on the scene. FIG. 4



**MOST** important and most often overlooked, reflections from clothing affect nearby objects as well as the wearers. Reflections from the young lady's blouse illuminate one side of the man's face. These reflections are



all right if the reflected light goes into the shadows, and the girl's blouse is white. If blue or green, it may give the side of boy's face an unnatural cast. Arrows indicate how light is reflected. FIG. 5

Dark "colors" do not reflect much light. In Fig. 6, the shadow beneath the chin is quite heavy only slightly relieved by a barely perceptible line of light along the jaw line.

Sometimes the shadows can be lightened by no more than a slight change in head position such as is shown in Fig. 7. The shadow side of the face is turned more toward the reflections from the blouse. The shadows are therefore opened up a little more and the line of light separating the chin from the neck is more noticeable.

The addition, of the hat matching the blouse, also tends to make the whole picture more acceptable to the eye in that the colored reflections on the face are not isolated from the mass of color which causes them; being tied together by the hat and the blouse, they become more acceptable to the eye.

#### **Clothes as Reflector**

In Figs. 8 and 9 the greater reflectivity of the bright (yellow) blouse is instantly evident in the greater luminosity of the shadows. The line of light separating the chin from the neck is also increased. This is why light-colored clothing is often suggested for color.

The pleasantness of the picture is not destroyed by the introduction of the same hat as is used in Fig. 7. In fact the color of this hat is somewhat lightened on the under side by reflection from the blouse and from the model's face. Discretion of course should be exercised in the selection of the color of the hat with the blouse so that a clashing of the reflections on the shadow side will not occur.

In all of these four pictures, the model is three or four feet from the background. Moving her this distance away makes the background almost negligible as a factor in reflecting light onto the subject, unless it is very extensive in area. Reflections are usually weak as compared to the principal light source.

Slight shifts in position have a great effect on the intensity of light from the reflections. Therefore remember that if the reflected light is desired, get very close

to the reflector with the subject. If it is not wanted, shifting the position just a few feet often eliminates it almost entirely. This naturally does not apply to the very large surfaces such as the surface of a lake, a broad expanse of blue sky, or a very large clump of brilliantly green trees. Distance enough to eliminate the reflections from these objects would necessarily have to be relatively greater.

#### **Study Subject Before Shooting**

Water is a good reflecting surface if it is large enough to make its effect felt at some distance. Being below a subject, it helps illuminate the shadows created by an overhead sun.

When the camera is above, the water surface makes a pleasant neutral background. Deep water makes the best background. Shallow water often is colored by reflections from the bottom, giving the water a gray or muddy tinge.

The amount of reflected light can be controlled by changing not only the distance from the reflecting surface to the subject, but also the angle of reflecting surfaces as shown in Fig. 13. A strong light coming over the model's shoulder striking the white pages of the magazine which she is holding will bounce light back into the shadows beneath her chin and on the far side of the face. By bringing this surface closer to the face, the shadows can be more strongly illuminated. By pushing it farther away or by turning it slightly away, the illumination of the shadows can be cut down.

Notice (Fig. 13) that the far cheek has a dark line of shadow which serves to separate it from the background. In black and white photography and in color photography it is always wise to look at the edge of prominent features such as the bridge of the nose, the far cheek line and the lip line to make sure that either by reason of color contrast or brightness contrast, there is a distinct separation of these prominent features from that part of the picture which lies immediately behind them. A light line can be created by bringing in a reflecting surface, a dark





A GIRL may appear very attractive in "cold" colors such as light blue, green, or violet, but may not photograph well in them. FIG. 6



THE ADDITION of a hat to add reflection from above, and a tilt of the head may be enough to illuminate the shadows. FIG. 7



LIGHT colored clothing is recommended for color pictures, especially with subjects of fair complexion. FIG. 8



THE SAME hat here as above, now appears lighter because of the reflection from the light dress. FIG. 9



line by killing off the reflections, but making sure that direct illumination supplies enough brightness on the features near the camera to make for a separation of tones.

**Kodachrome Effects and Causes**

Distorted colors may be caused by incorrect exposure. Kodachrome when underexposed yields dark transparencies with very dense and off-color shadows.

Overexposure is the cause of thin light Kodachromes with blank, "washed out" highlights.

Early morning or late afternoon sunlight has an overabundance of red. Pictures taken outdoors before 9 a. m. or after 4 p. m. have an excessive redness, or the transparency may look purplish.

Yellowish pictures result when the yellow filter (for use with black and white pictures) is accidentally left on the camera.

Use of wrong type of Kodachrome causes distorted color rendering. There are two types of roll film, Kodachrome daylight and Kodachrome night (type A).

Excessive redness is caused when the daylight type Kodachrome is used with artificial light. The "Kodachrome filter for photoflood" is required when using daylight Kodachrome with flood or flash.

Excessive blueness is caused when the night (Type A) Kodachrome is used in daylight, unless "Type A Kodachrome filter for daylight" is employed.

## 6 LITTLE SECRETS

To Paste In Your Hat

For

BETTER COLOR—BETTER PICTURES

1. Always have plenty of light on the front of your subject—BUT get extra light in from the back or side as well.
2. Learn to see and use all the light hitting the subject—VIOLET light, BLUE light, GREEN light, YELLOW, ORANGE, RED light.
3. Use the whole picture area. Find your picture in the finder.
4. Get your image sharp—in focus—with a steady camera.
5. Expose correctly—and know it.

Excessive redness also may be caused by allowing a long time to elapse between exposure and processing. Kodachrome should be processed promptly. It should not be kept in the camera for a long period of time, especially in damp climates. For a complete list of Kodachrome processing stations see below.

## KODACHROME PROCESSING

There are five processing stations for Kodachrome in the U. S. All of these handle motion picture Kodachrome. Film for processing can be sent to the nearest station.

Amateur Kodachrome (35 mm. and Bantam sizes) is processed at Rochester, Chicago or Los Angeles.

Professional Kodachrome is processed only at the Los Angeles or Rochester stations.

The following is a list of world-wide processing stations for Kodachrome:

- ROCHESTER, NEW YORK**  
Eastman Kodak Company  
8-mm. and 16-mm. Kodachrome  
35-mm. and Bantam Kodachrome  
Kodachrome Professional Sheet Film
- CHICAGO, ILLINOIS**  
Eastman Kodak Company, 1712 Prairie Avenue  
8-mm. and 16-mm. Kodachrome  
35-mm. and Bantam Kodachrome
- SAN FRANCISCO, CALIFORNIA**  
Eastman Kodak Company, 241 Battery Street  
8-mm. and 16-mm. Kodachrome
- LOS ANGELES (Hollywood Station), CALIFORNIA**  
Eastman Kodak Company, 1017 North Las Palmas Avenue  
8-mm. and 16-mm. Kodachrome  
35-mm. and Bantam Kodachrome  
Kodachrome Professional Sheet Film
- WASHINGTON, D. C.**  
Eastman Kodak Stores, Inc., Cine-Kodak Processing Laboratory  
1350 Okie Street, N. E.  
8-mm. and 16-mm. Kodachrome
- TORONTO, CANADA**  
Canadian Kodak Co., Ltd., Toronto, Ontario  
8-mm. and 16-mm. Kodachrome
- HONOLULU, HAWAII**  
Kodak Hawaii, Ltd., 1065 Kapiolani Blvd. (P. O. Box 1260)  
8-mm. and 16-mm. Kodachrome
- LONDON, ENGLAND**  
Kodak, Limited, Wealdstone, Middlesex  
8-mm. and 16-mm. Kodachrome  
35-mm. and Bantam Kodachrome
- BERLIN, GERMANY**  
Akt. Fabrik, Friedrichshagener Strass 9, Köpenick  
8-mm. and 16-mm. Kodachrome  
35-mm. and Bantam Kodachrome
- STOCKHOLM, SWEDEN**  
Hasselblad's Fotografiska, A. B., Nybrokajen 5  
8-mm. and 16-mm. Kodachrome
- MELBOURNE, AUSTRALIA**  
Kodak (Australasia) Pty., Ltd., 252 Collins Street  
8-mm. and 16-mm. Kodachrome  
35-mm. and Bantam Kodachrome
- JOHANNESBURG, SOUTH AFRICA**  
Kodak (South Africa) Ltd., 63, Risik Street  
8-mm. and 16-mm. Kodachrome
- PARIS, FRANCE**  
Kodak-Pathé, S. A. F., Avenue Victor Hugo, Sevran (Seine & Oise)  
8-mm. and 16-mm. Kodachrome  
35-mm. and Bantam Kodachrome
- BOMBAY, INDIA**  
Kodak Limited, Kodak House, Hornby Road  
8-mm. and 16-mm. Kodachrome.



**COLOR** bleeding is most pronounced when a reflecting surface is close to the subject. Lying on the sandy beach, the girl's head



receives warmly-colored reflections from the sand. This is a good way to illuminate the shadows in a portrait. **FIG. 10**



**COLOR** bleeding may be avoided by having the background away from the shadow side. Here the red brick wall cannot affect the near side of the face. **FIG. 11**

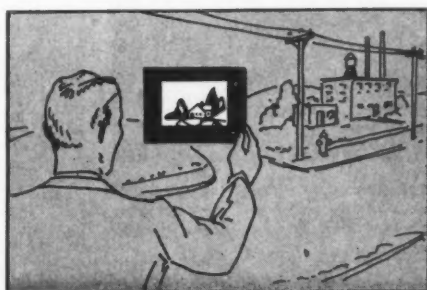


**WATER**, being below the subject, serves to illuminate shadows under the nose and chin. These reflections are very helpful when the sun is directly overhead. **FIG. 12**



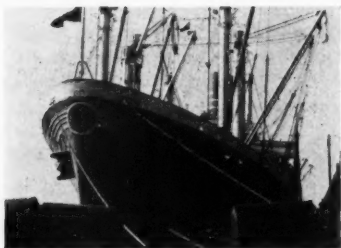
**A BOOK** or magazine can be held so as to reflect light exactly where it is wanted. To give warm flesh tones, use a sheet of pink paper or cardboard. **FIG. 13**

**WHAT** A man "sees" is an interpretation—modified by experience. He will say that a projected color picture is too vivid, or that the colors are not true. He will be surprised at the real vividness of nature's colors if he will deliberately look at them with one eye shut through a rectangular opening in a black card, thereby approximating the condition under which he views a color picture. There, incidentally, is one way to learn to judge picture values. Experience in framing scenes with a black card, viewing them always with one eye, will develop picture sense and color awareness. Another viewing method is described on page 20.



# MAKE IT *A vacation you'll*

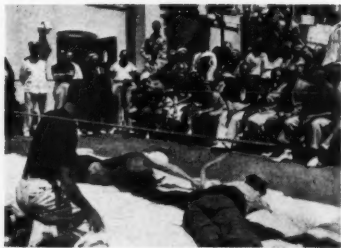
WRITTEN AND ILLUSTRATED BY JEFFREY QUINN



**NO** matter whether your mode of vacation travel is exotic or prosaic devote some footage to transportation.



**FILM** a roadside pause for refreshments or to see a point of interest. It adds the feeling of "traveling."



**IN** filming a vacation cruise, use scenes of life on board as transition shots between ones at ports of call.

**C**OLOR FILMS ARE a new dimension in parlor fun. Like the baby enthralled with its toes, we like color for its own sake. So we pack some Kodachrome along on our vacation, "shoot off the cuff" hoping for the best, and like what we shoot because it's ours.

Yet we all know that with just a little planning every foot of those vacation reels, in *either* black and white or color, can be made to carry the fun-packed story and the long lazy memories of happy summer days.

First of all, establish a general pattern into which every shot must fall. Then, no matter how haphazardly the individual scenes must be taken they can be assembled and edited to create a smooth-flowing, interesting picture.

The first weak spot in a vacation film is right at the beginning. Because most vacation films don't begin at all. They generally open in the middle—after we have arrived at our destination and settled into vacation routine. No hint is given as to where we are and how we got there. It's better to begin the vacation film closer to home. A scene of preparation for the trip, is a logical opener. This can be made some time before or after the vacation pictures. As long as it is "in season," no one will be able to tell that it wasn't made the morning of your departure. Maybe you prefer an indoors shot, showing the family reading travel folders, planning the tour on a map, or choosing a stateroom on the deck plan of a steamship. Openings like this can be pointed up with humor. For example, a seashore *vs.* mountains argument, or difficulty in folding up the map. The opening may also be condensed into a single shot that dissolves into the following scene.

Next show scenes of packing and, for an auto trip, loading the car. This introduces the means of transportation without dragging in an other-

# always remember!

HOW TO RECORD A TRIP, WHETHER IT  
BE A LONG CRUISE OR WEEK-END JAUNT

wise superfluous title. Bits showing the difficulty of closing an overstuffed suitcase, or squeezing the last small satchel, containing old work shoes and some odds and ends of fishing tackle, into the last available cranny of the auto luggage compartment, will expand this sequence entertainingly for a long film. If preferred, this scene, too, may be condensed to a single shot connected by dissolves to the previous and following shots. Thus, in an opening shot taking from 45 seconds to several minutes of screen time, we establish the fact that this is a vacation film. No need for verbal explanation.

*En route* there are pictures to be taken. There are shipboard games, if we are taking a sea voyage. Every one takes these, and little needs to be said about them. Traveling by train, there are scenes to be taken, on the train, or getting on and off. But since we all do that when we travel by train, keep these shots *short*. Photographing from a train or automobile is not difficult, if a tripod is used. Take pictures through the front or rear windows, not from the sides unless the scene is at a great distance. Otherwise, the objects rushing past the car on the screen will be blurred.

In taking such landscape films, however, there is a fixed rule. Never shoot wide stretches of open country—they are flat and uninteresting on the screen. If you really want a good shot of some scenic point, stop the car and take the picture from outside. It will be worth the delay.

Arriving at our destination, we should get a general shot of the place—city, hotel, harbor, or whatever it is. In the excitement of arrival, this is often overlooked. But it need not be taken then. It may be shot at any convenient time after arrival, and placed in its proper sequence in editing. This scene serves to establish the locale for the remainder of the film and should never be omitted.



**THERE** is no better way to identify scenes and places on the trip than by shots of unusual signs or markers.



**ARRIVAL** at resort or hotel is indicated by a shot of the building. This also establishes the film's setting.



**KEEP** "cute kiddie" shots at a minimum in vacation reels. Save most of them for a film of your family life.

If, of course, we are on a tour of several places, the same thing should be done for each place we visit.

If there are any interesting signs or posters explaining points of interest, the name of the town, the name of the hotel, by all means photograph them. Frequently these shots may be made to serve in lieu of titles. Be sure, in this connection, to get sufficient footage of each sign for easy reading. Err on the side of too much in this case. The excess can always be removed in cutting, whereas a sign which does not stay on the screen long enough to read is worthless.

Now we come to one of the frequent weaknesses of the vacation film—pictures of people. Not that the average vacation film is lacking in pictures of people. The usual difficulty is in the other direction. Most vacation films, like most vacation snapshots, are composed exclusively of people. The procedure runs something like this: The party arrives, let us say, at Washington monument. Immediately, cameras are unslung and snapshots—or movies—are taken. First I take you—then you take me, in front of the monument, of course. In the confusion, and rush to see other sights, the monument itself is completely overlooked, and when we get home, having done the same thing elsewhere we have again the typical vacation movie. Composed entirely of close-ups of the same few people grinning into the camera, with little or no background visible, the picture might as well have been taken in our own backyard, and will interest hardly anyone but us.

Now, this doesn't mean that we are to shoot a cold, impersonal travelogue when we go on vacation. Far from it. We should, of course, be the principal actors in our own films. But also consider the audience—they have seen us; perhaps they have not seen the places we visited. There is on objection, in fact, it is an excellent idea, for one of the party to appear in the foreground, looking at the scene in question, pointing at some important feature

of it, but not *obscuring* it.

People present other problems. As a rule, keep strangers out of the picture. Not of course, picturesque natives, if we travel abroad. They are as much a part of the pictures as the buildings and mountains. If one of the party wishes to appear in the shot with the natives, fine. It will point up the contrast even more. But in local vacationing, the appearance of a camera brings forth a horde of lens lice who like nothing better than to edge into a picture with ridiculous posturings and grimaces. No matter how funny they may seem—some may be casual acquaintances, met at the resort, some strangers—avoid photographing them, or if you must, to get rid of them, cut the film out in your final editing.

This applies to all casual acquaintances—it is better to be hard hearted, or diplomatic, whichever is easier. But don't photograph them. Time has a disconcerting way of making us forget who these people were—their very names in fact, and we have a film full of strange, and uninteresting, faces. It is hard to avoid photographing members of the party on a guided tour, but it is harder yet to have your best shot of the Grand Canyon spoiled by continual questioning from the audience as to who those people are. If they are doing something interesting, of course, that is different. Yet even then, it is better to have a member of your own group doing it.

The problem is greater in the case of the usual mountain or seashore resort vacation, merely because most of the activity in these places consists of crowds of people doing the same thing. The solution is the same—don't photograph strangers. Don't even photograph their cute babies.

All these don'ts leave the question—what to take? In general ask yourself: "What is *different* about this place?" People all eat, drink, and loaf pretty much the same way. There is, therefore, little use in photographing that—except perhaps a few short clips for transition pur-





**WASTE** no footage on groups of new acquaintances posed as for a snapshot. Anyone who is worth filming deserves to be shown in action.



**EVEN** strangers, on the other hand, provide entertaining sequences when filmed in action on tennis court, golf course, or at the pool.



**USE** a red or dark yellow filter to add personality to the skies in your landscape shots. Even a plain blue sky looks better filtered.



**USE** fast film and an  $f/1.9$  lens on informal entertainment. At half normal camera speed a slower lens may film slow action in dim light.



**THE** spotlights used to light more formal entertainment at larger resorts permit working at normal camera speed at  $f/2.8$  on Super XX.



**HOME**COMING calls for at least one shot of some familiar landmark as your car or bus or boat or train passes it at vacation's ending.



poses. But if the resort has some unusual sport or attraction, by all means photograph that. And have one of your own party (you, yourself, if you can get someone to take the picture) participate in it.

Incidentally, don't be ashamed to ask people to film scenes for you. It is the easiest way to include shots of yourself in your own vacation films. Of course, adjust the camera yourself, first. Let the friend or acquaintance stand-in for you while you focus. And carefully explain the viewfinder to them, to be sure that they get what you want on the screen.

One more thing, before we get technical. Most vacation films end at this point. But a vacation film needs an ending as well as a beginning. If filming a voyage, include a shot of the returning ship, and a flash of your party depositing luggage on the dock or the front porch. For an auto trip, show the car being loaded for the homeward journey and the arrival at your front door. These shots require but little film and can be taken at any convenient time. Included in the final film, they round it out and provide a logical closing sequence.

The equipment problem is a big one, on any vacation. On our first movie vacation we generally take nothing along but the camera. Looking at the finished picture, we make a mental resolution to take a complete outfit the next time. And that is an even greater danger.

Keep equipment at a sensible minimum. Take only what can be comfortably packed in a small light case which can be easily carried over the shoulder. More than that is tiring.

In addition to the camera and film, include a compact sunshade, two filters (medium yellow, and light red) and an exposure meter. If color film is to be used, the filters will not be necessary, though a haze filter, and a Wratten 2-A may be substituted. The haze filter looks like a piece of clear glass, and serves to reduce the bluish appearance of distant scenes, or pictures taken at high altitudes. The 2-A is a faintly yellow filter, which is used to prevent pictures taken in the shade

from being excessively blue. This bluish tint is reflected sky light, and tends to make shaded scenes appear colder in color than those taken in sunlight. The principal function of the Wratten 2-A filter is to correct this and give a bit of "sun" to color scenes taken on overcast days.

The exposure meter is a "must," especially with color film, which requires extremely accurate exposure for best color rendition. In black and white, its use may be dispensed with most of the time, especially if the camera has a built-on exposure guide. But in difficult lighting conditions, the saving in spoiled film will quickly make up for the small added trouble of carrying one.

A light tripod is always handy, though if you can hold the camera steady, and use only the 1" lens on your 16mm. camera (or a 13mm. lens on an 8mm.), it may be dispensed with. When using other lenses, however, such as the 3" telephoto (1½" for 8mm. cameras) a tripod is *essential*. These lenses magnify the scene, bringing it closer in the same way that a 3-power telescope or binoculars do. This is convenient for closer shots of distant objects, but it must be remembered that while they magnify the subject three times its regular size, they also magnify any movement of the camera in the same degree. That is why a tripod is necessary for a steady picture with telephoto lenses.

Some of the best vacation pictures occur at night, and artificial light is seldom available. It is out of the question to carry lighting equipment on a vacation, and even if it were possible, it would not be recommended, merely on the principle that this is a vacation and not a photographic *job*. But some help can be had from fast film. If you use a magazine loading camera, this is no problem, since the change from regular to fast film, or from color to black and white can be made instantly, without loss of film. Otherwise, it would be wise to use the fastest film possible when you expect to shoot at night, or indoors. In this case, carry a neutral (light gray) filter. Ultra fast films will  
(Page 90, please)



**"SCALING THE HOLY PRECIPICE—"** Pious pilgrims risk their lives for the "honor of Allah," near Tozeur in Southern Tunisia, it is claimed. Are these pictures phonies?

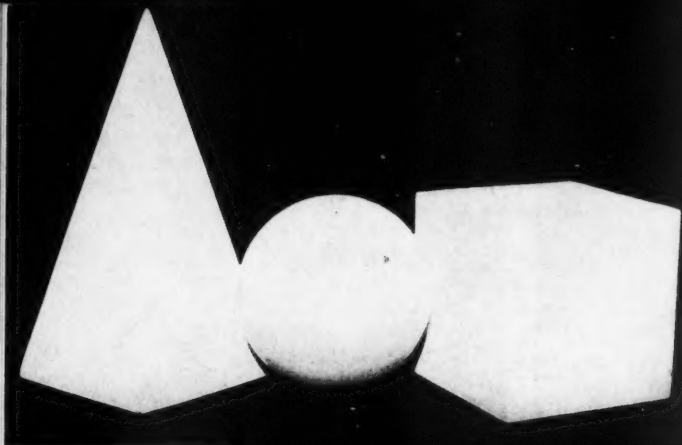


**"HEADLONG TO DEATH!"** The second pilgrim loses his grip! Pictures of falling objects are easily faked by cutting out and pasting up figures of suitable size.

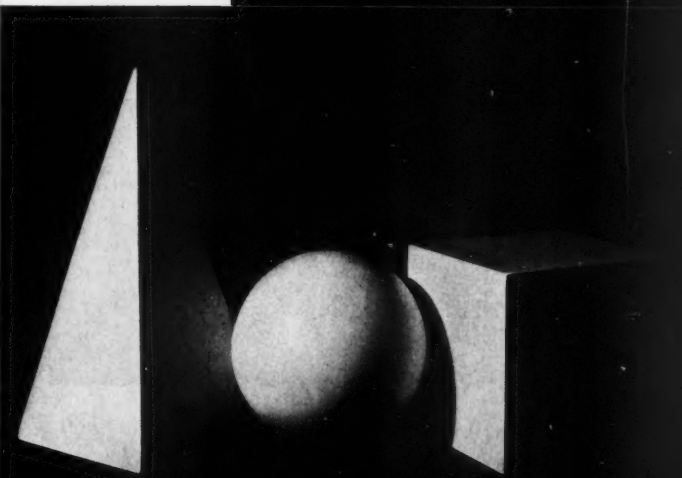
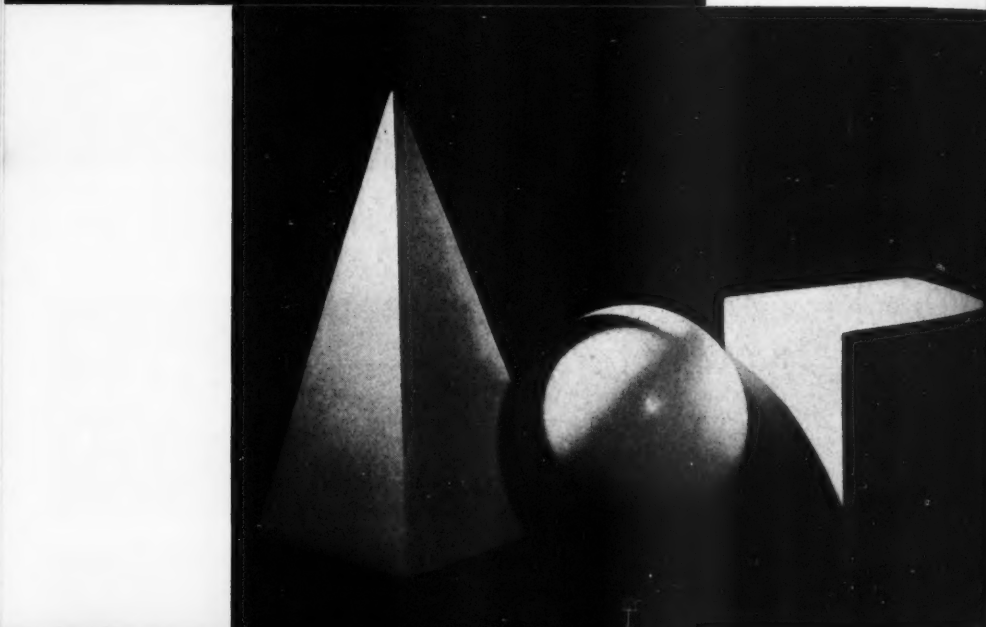


**BALL LIGHTING!** An incandescent sphere, the size of a child's head, rolls out of a fireplace (above). It whisks across the room to the nearest window (right)! How done? A small cardboard disc held over the print while enlarging doges in the "ball" of lightning.





WHITE geometric shapes against a black background, lighted to eliminate all shadows. Nothing three dimensional here! If the forms were against a white background, they would be almost invisible! Yet there is plenty of light!



TO ILLUSTRATE the importance of the absence of light, let's take away, or intercept, some of the light. Shadows result. They give form to the pyramid, sphere and cube.

# THE MAGIC OF *Light*

## KNOW LIGHT AND YOU KNOW PHOTOGRAPHY

From "THE AMATEUR PHOTOGRAPHER'S HANDBOOK"

By A. Frederick Collins and Aaron Sussman—Thomas Y. Crowell Company, Publishers

OF all the wonders of the world, and there are many more than seven, none is more wonderful than the phenomenon of light. It not only creates life—the blade of grass, even man himself—but it puts on, daily, the most magnificent show which ever escaped a Hollywood producer, that colossal spectacle of forms and colors known as the changing universe.

Whether you are eager to discover what goes on in the vast spaces outside our world, or just curious about what goes on inside the atom, light says, "Here's the way it is. Look!" With the beams of an X-ray tube, you can see through impenetrable objects; with infra-red light, you can cut through the haze of distance, take pictures in the dark, recover what has been blotted out or destroyed. Light can open doors, and close them; it can point things out, or hide them. And this is the amazing stuff which photographers use when they carelessly take a snapshot of a Sunday.

Since the function of photography is to reproduce the shape and tones of things, and since light is the substance which makes this miracle possible, it is important, right at the start, that we learn about light—what it is, how it acts, what it does, and how to control it.

### Where It Comes From

The light that shines on the earth comes from the sun. The stars, being distant suns,

provide a little, and the moon reflects a bit of the light she herself gets from the sun, but for practical purposes, all natural light is direct or reflected sunlight.

The amount of light reflected by a full moon on a clear night is estimated at 1/150,000 of that of the sun. A snapshot of the moon itself, can be taken at about 1/25 second. But photographing a moon-lit scene, requires 150,000 times as much exposure as the same scene by sunlight. An exposure of 1/25 second by sunlight therefore would be equal to 100 minutes (1 hour, 40 minutes) with the same lens opening for the same scene by the light of a full moon.

### Light Travels in Straight Lines

There are two ways you can test this axiom for yourself. First, look at a beam of light in a darkened room. What you see is the atmospheric dust intercepting the light waves and reflecting them. If the room were dust-free you could not see the beam, only the spot of light when the beam hit the floor or a wall.

For the second method, use a cardboard box, about the size and shape of a shoe box as in Fig. 1. Remove the cover and use it to cut a square of cardboard that can be slid along the sides inside the box. Placing this center card flat against one end of the box, run a hatpin or a needle right through the box and the movable card. Do the same with the other end,

*"Light glorifies everything. It transforms and ennobles the most commonplace and ordinary subjects. The object is nothing; light is everything."*

—Leonard Misonne

using the hole made in the loose card to locate the position for the third hole. Finally, place a light at one end of the box and look through the other. If the holes are in a straight line, you will be able to see the light. But if you lift the loose card the least bit, the light will disappear.

### Light Loses Intensity

The further it has to travel, the weaker it gets. The formula that accounts for this is called the law of inverse squares, and reads: Light decreases as the square of the distance. Let's see if we can make that clear. When the distance between a light source and a lighted surface is doubled, the light spreads out and covers four times the area, each quarter getting one-fourth as much light. At three times the distance, the light covers nine times the area with one ninth the intensity. Fig. 2 shows why this happens.

### Light Is Reflected

When you photograph a blazing bonfire or a burst of fireworks or in the city at night, you are photographing direct light. What you do in each of these cases is to photograph the actual source of light. When you photograph the moon, or a curvy torso on the beach, or a face in a mirror, you use reflected light.

Reflected light may be: (1) specular (or even), (2) diffuse (or ragged) and (3) spread (or mixed).

Specular light is reflected from a smooth, highly polished surface like a sheet of glass or chromium plate. See Fig. 3. When specular light is reflected from an object, it is difficult to see the object. That's why coated paper is hard on the eyes and why glass-covered pictures are difficult to view.

Diffuse light is seen when you read a book printed on "wove" paper—each fiber of the paper presents a new surface to the light, sending the rays helter skelter all over the place. Fig. 4 shows what happens when the glass used in Fig. 3 is broken up and crushed.

The light reflected by this crushed glass will be diffused if all of it is ground to a fine white powder. If some shiny particles remain, they will continue to reflect specular light. This combination of diffuse and specular light is called spread, or mixed light. That's the kind of reflected light we use most of the time in photography.

Reflection increases with the polish of the surface or with the obliqueness of the angle of incidence. To prove the obliqueness part of this to yourself, take an ordinary sheet of white paper, one that does not have a shine to it, hold it near a reading lamp and tilt it at a sharp angle so that you will be glancing across the surface at the light source. You'll see a reflected image where only a moment ago there was just diffused light.

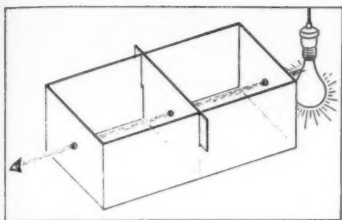
You can see an object better by diffused light than by specular light. That's why a person may inadvertently walk into a mirror. What he saw was not the object itself (the mirror) but the specular reflection of distance objects and light sources. This becomes an interesting problem when photographing bright metals, glassware, oil paintings, pictures under glass, or other shiny objects.

### Light Is Refracted

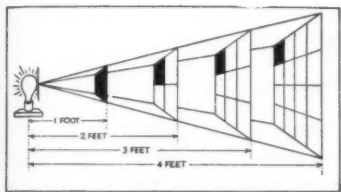
When a ray of light travels through empty space outside the earth's atmosphere, or in a vacuum, it does so at a constant speed. But when it passes through a transparent substance like air, water, glass or quartz, it is slowed up. This slowing up depends on two things: (1) the density of the new medium, (2) the wave length of the rays of light. The denser the medium, the slower the rays travel. And the longer the wave length of light, the less will it be affected.

As long as the ray of light stays in one medium, this slowing up causes no trouble. But when it starts moving from one medium to another, things begin to happen. One of these things is that the slowing up bends the rays out of shape.

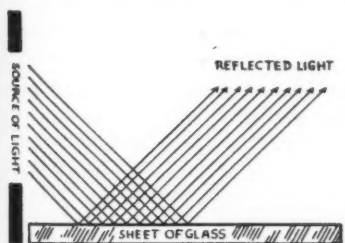




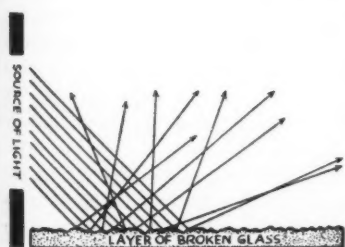
**SIMPLE** experiment proves that light travels in straight lines. **FIG. 1**



**HOW** light loses intensity. A light source at two feet is one-fourth as bright as at one foot. **FIG. 2**



**THE KINDS** of reflected light. A smooth surface reflects specular light. **FIG. 3**



**A ROUGH** surface reflects diffuse light. **FIG. 4**



**THE WAVE** fronts of light may be visualized as parallel lines. **FIG. 5**

An easy experiment to prove this involves nothing more than a pencil and a glass of water. Put the pencil into the glass at an angle, and look at it from a sharper angle. The lower end will appear to be bent up. An old disappearing coin trick was based on this phenomenon: the coin was placed at the bottom of an empty opaque bowl and the bowl was moved away just far enough so that the rim hid the coin; when water was poured into the bowl the coin mysteriously reappeared.

One other stunt, and then we'll explain why all this happens. Take a piece of heavy plate glass, as thick a piece as you can get, hold it horizontally over a table, place a coin under it and then offer to give the coin to anyone who can, while looking through the glass, stab the exact center of the coin with something like a toothpick the moment you say "Ready!" You'll get many volunteers, but the coin will still be yours when they've all had their try. Let them study the coin through the glass all they please; the more they do so, the more elusive will it seem when you give the signal.

And now for the explanation. When a ray of light travels horizontally, the waves which compose it move vertically at right angles. The wave fronts are all parallel, like a row of buttons strung on a thread. Looking at them sideways, they'd look like Fig. 5.

As long as this wave travels through one homogeneous medium, the space between the lines, which represents the wave length of the ray, will remain the same. But let's see what happens when the light wave hits a medium of greater density. In Fig. 6, we see the wave passing from air, through a cube of glass, and out into the air again. The wave is slowed up, and so the lines are packed together more closely, which means that the wave is shorter. When the light leaves the glass, it picks up speed again; the distance between the lines increases, which means the wave is longer.

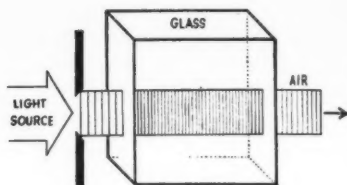
Now how does all this serve to explain the bending of light? See Fig. 7. We've taken our glass cube or prism and sliced one end of it away at an angle. The light now enters the prism obliquely. The first wave impulse to hit the glass makes contact at A. It's slowed up at that point. While that part of the wave starts to travel through glass, a denser medium, the rest of it is still in air. The result is that the wave begins to pivot at A, which changes its direction. When it leaves the glass

again, C hits the air first and swings away, forcing the wave to pivot at B, thus changing its direction once more. Light is always bent toward the perpendicular of the surfaces when it passes from a rare to a dense medium. Conversely, it is bent away from the perpendicular when it passes from a dense to a rare medium. But something else happens to the light when it leaves the prism in Fig. 7. We shall see what that is in just a moment.

### The Critical Angle

When light passes from one medium to another at right angles to the surface, no refraction (bending) occurs. Some of the light may be reflected. If one of the media is air and the other is a substance like glass, the unreflected rays of light stream through unchanged (except in speed, which we shall discuss in a moment). But as we move the light source further from the perpendicular, we notice that the direction taken by the incident ray, after it hits the surface, seems to be erratic. To find out what happens, let's imagine a hollow glass sphere half filled with water and a source of light outside, as in Fig. 8. (Since we can imagine the light source as a point, sending a ray at right angles to the surface of the glass, there will be no refraction as the ray passes from air through glass to water). Now hold the light at A and an unrefracted ray will leave the globe at E. Move the light to B, and instead of seeing a ray at F, it will suddenly appear at G; it has been refracted. Move the light once more, this time to D; the reflected ray will appear, as you expect at I. But if we move the light back to C and look for the ray at J, where a well-behaved, reflected ray should be (since the angle of incidence COA and the theoretical angle of reflection AOJ are equal), it will just not be there. You'll find it at H, skimming along the surface of the water!

Angle COA is called the critical angle; it determines whether the ray is going to be reflected or refracted. This angle varies



**HOW LIGHT** passes through a transparent object the surfaces of which are plane parallel. FIG. 6

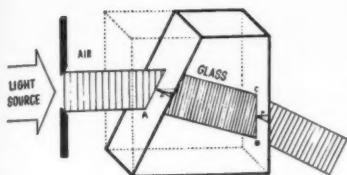
with the color of the light used; it is greater for the red rays than for the blue.

### Light Is Dispersed

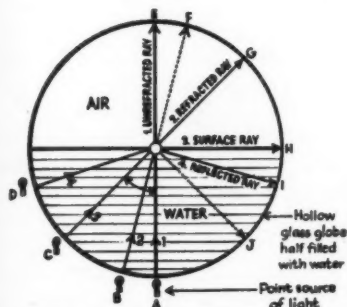
White light is composed of seven spectral colors: violet, indigo, blue, green, yellow, orange and red. We see them as such because certain vibrations of light produce these sensations of color in our eyes. A wave length of 700 millimicrons, for instance, produces the sensation of red; a wave length of 400 millimicrons, the sensation of violet.

When they all travel together in parallel lines, as in Fig. 6, we get the sensation of white light. When they travel through a dense medium, the surfaces of which form an angle, the rays begin to be dispersed, or spread out; they no longer travel together in parallel lines. The result of this is shown in Fig. 9. To decompose white light, therefore, we use a triangular prism. Sir Isaac Newton was the first to try this experiment. It is simply a modification of the light bending experiment we tried in Fig. 7, except that by cutting away both sides of the cube to make a triangular prism, we bend the light sharply and so disperse it fully.

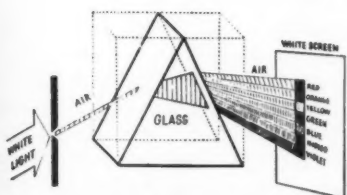
Newton tried two other interesting experiments with prisms to test his theory that white light was mixed light. In the first, he duplicated the setup shown in Fig. 9, but instead of the white screen for the spectrum he used an opaque screen with a slit in it that would permit only the yellow rays to get through. On the other side of the screen he placed another triangular prism to refract the yellow light. But he couldn't disperse it;



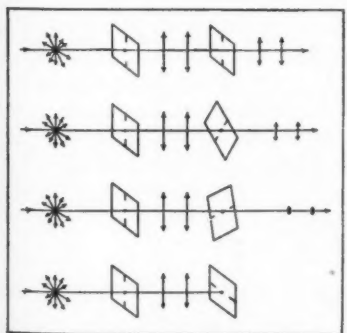
HOW LIGHT is refracted and partly dispersed when passing through a transparent object the sides of which are not plane parallel. FIG. 7



ILLUSTRATING the critical angle of reflection and refraction (Angle COA). A ray from C just grazes the surface between both mediums. FIG. 8



HOW LIGHT is dispersed when passing through a prism. FIG. 9



THE POLARIZATION of light. FIG. 10

the yellow light remained yellow! He tried this also with the other six spectral colors, and discovered that none of them could be broken down. Only mixed light, he found, could be so dispersed. He concluded that the seven spectral hues were basic or primary colors.

In his second experiment, Newton took two prisms and arranged them so that the dispersed white light from the one would enter the inverted side of the other (the points of the triangles facing in opposite directions). In this way he showed that white light could not only be decomposed but recomposed. The second prism, as you guessed, gathered the dispersed rays and refracted them to reproduce white light.

### Light Is Polarized

There is still another phenomenon of light that's of interest to photographers, and that is the mysterious one known as polarization. If we can imagine each pin point of light as an expanding cone and let that represent light waves spreading out in all directions, then polarized light (or light that travels in only one direction) can be represented by a plane which bisects this cone from its apex to the diameter of the base at infinity. This phenomenon was first studied by Huygens, who discovered that the crystals of certain translucent minerals had the property of stopping light when they were placed in their long axes at right angles to one another. The crystals act like optical slits which transmit only light vibrating in the plane of that slit. The degree of polarization can be controlled by the rotation of the crystals.

Fig. 10 illustrates the effect of rotating one Kodak Pola-Screen in relation to another. When the vibration plane of the second Pola-Screen is at right angles to the first, almost no light gets through.

### Light Bends Around Corners

Place two fingers close together, almost but not quite touching, and bring them up to your eye. Now look through the fingers at a light source and you'll see one of the strangest of all the phenomena of light. First you'll see what appears to be a shadowy aura around the edge of both fingers; as you move them closer together these shadows will become a series of parallel lines darker in intensity, and resembling somewhat the lines on a contour map. Just before the fingers

touch, these contour lines will seem to jump toward one another, creating what appear to be little bumps on each finger. This phenomenon, known as diffraction, occurs whenever light hits an edge.

### What Light Does

Now that we know something about what light is and how it behaves, we can investigate some of the things it does. Chief among these, as far as photography is concerned, is its ability to (1) cast shadows, and (2) create an image. But before we take these up, let's dispose of a few questions that have troubled the curious for ages.

### What Makes A Rainbow?

Unless we have forgotten all that we have just found out about refraction and dispersion, this problem shouldn't be so tough to unravel. The raindrops, of course, are responsible. The few stragglers that are still up in the sky when the sun comes out act like so many tiny prisms to disperse the rays of sunlight. Those on the outside of the arc send red rays to the eye; those on the inside, violet ones. The other colors are transmitted from the intermediate drops. The bow or arc is really the circumference of the base of a cone, the apex of which is the observer's eye. If an imaginary line were drawn from this apex, (your eye) through the center of the rainbow circle and extended far enough, it would hit the sun. The shell of the cone is composed of seven layers of color, one within the other, corresponding to the colors of the spectrum.

### Why is the Sky Blue?

Nature always seems to be splitting light into its many colors or wave lengths. The blue sky is one example familiar to most of us; another is the red sunset; still others are soap bubbles, mother of pearl, peacock feathers, the iridescent shells of certain insects, a film of oil on water, the sparkle of a diamond.

The blue sky is caused by the screening effect of the earth's envelope of atmos-

phere. This envelope extends upward about twelve miles, and the first four or five miles are packed with dust and water particles of all sizes suspended in the air. Many of these particles are so incredibly small that they are almost the same size as the wave lengths of blue light, about 1/600,000 of an inch. In consequence, they scatter the blue waves, letting the others get through as white (or at least almost white) light. See Fig. 11.

The illustration in Fig. 11 also explains why morning and evening sunlight is redder than the light at high noon. When the sun is low on the horizon, the light has to push through a denser fog of atmosphere which scatters the violet, blue, green, and some of the yellow rays and lets the long red rays through. This change in the color of daylight, from morning to evening, becomes important to us when we take up the problems of exposure, film sensitivity and filters. In the meantime, all we need to remember is that the light between nine in the morning and four in the afternoon is best for normal use outdoors, especially when taking color pictures.

And while we're on the subject, the iridescence produced by soap bubbles, bird feathers, diamonds, and so forth (all of which are examples of dispersed light) can be distinguished from the ordinary absorption colors of substances because the iridescent colors change as the point of view changes.

### Light Casts Shadows

Almost as important to photography as light itself is the absence of light. Without shade or shadow, most pictures would be impossible. See the illustrations at the beginning of this article in which three geometric figures have been painted white, arranged against a black background, and photographed. They show that shadow is part of the picture.

### The Kinds of Shadows

There are two kinds, those made by a point source of light, and those made

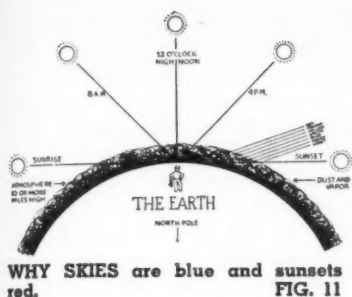
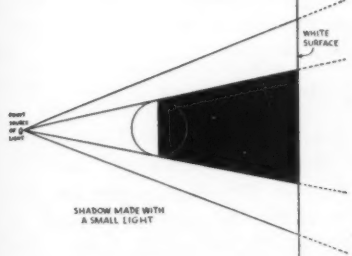
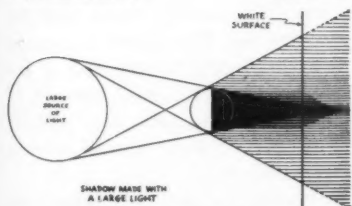


FIG. 11



**THE KIND of shadow depends on the source of light. A point source (like the sun, or a spotlight) casts a dark shadow with sharp edges. A naked (unfrosted) mazda lamp, without a reflector, also may be used as a point source.**

FIG. 12



**A LARGE source of light casts a large, ragged shadow, darker in the center and shading off gradually. The edge of the shadow is hardly discernible. Examples are a frosted lamp or a diffused light source.**

FIG. 13

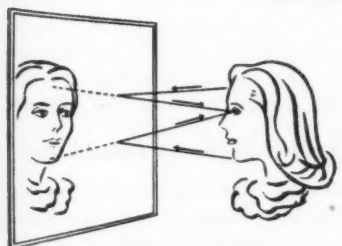


FIG. 14

by a large source of light. The difference between them is that one makes a hard shadow with a sharp edge and the other a translucent shadow with a soft edge. If you will look at Fig. 12 you will understand how this happens. Some photographers like to distinguish between the various dark areas, so they call the lighter part of a soft-edged shadow, the shade.

Short shadows are made by overhead lights; long shadows, by side lights (the lower the light, the longer the shadow). Changes in the shadows made by the sun illustrate this perfectly.

Contrast is increased between the light and dark areas of an object when the light is strong, close, raw, direct, or point source; it is reduced when the light is weak, distant, diffused, reflected (as from a wall or sheet or card), or large source.

Hard shadows can be softened by reflected light, by diffused or weak supplementary light, by moving the basic light further back, by changing the size and shape of the reflector (the larger the angle of the cone, the softer the light), and by changing the inside surface of the reflector (the more polished the surface, the harder the light).

And that's about all you have to know about shadows, except that there are no absolute blacks in nature, that the whitest substances found outdoors (chalk, for instance) reflect only 85 per cent of the light that shines on them, and that the light intensities outdoors aren't as great as most amateurs think they are. The sky (we did not say the sun, now) is only thirty times as bright as the deepest shadow in strong sunlight and the sunlit road you walk on is only six times as bright as your own shadow under an open sky. If you don't believe this, take your exposure meter outdoors and make some readings.

## Light Creates An Image

The most interesting property of light, its ability to form an image, stems from the fact that it travels in straight lines. There are three ways in which an image can be formed: (1) by reflection, as in a mirror, (2) by projection, as through a pinhole, and (3) by refraction, as through a lens. We can take up the first two now.

First, let's consider the mirror. The kind we have in mind is one that has a plane glass surface. When light from any point on an object is reflected from such a mirror, it travels with those

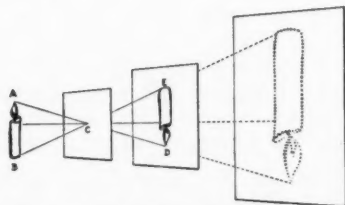


old friends of ours, the laws of reflection. That is, each ray hits the mirror and leaves it at precisely the same angle (the angles of incidence and reflection). How does this form an image? See Fig. 14. When a ray of light is reflected or refracted, the direction it seems to have is the one taken by the ray just before it enters the eye. If we can, therefore, imagine the reflected cone of light which emanates from a point, extending behind the mirror, all the rays composing it will meet at the same point. This will give us the impression that the point is on the other side of the mirror, and as far from the surface on that side as we are on this. Since this kind of image is nothing more than an optical illusion, it is called a virtual image, as distinguished from the real image made by a pinhole or lens.

### How Light and a Pinhole Form An Image

If you have a ceiling light such as I have, with three bulbs in it, and your friends find you moving a card around between it and a white sheet of paper, you can show them this paragraph and the pinhole in the card to prove that there's nothing wrong with you. You are just trying to duplicate something first noticed by a tired Egyptian many years ago.

It is because light travels in straight lines that it is able to form an image on a screen when it passes through a small hole, and for the same reason the image will be upside down. This inversion of the image is made clear in Fig. 15. In



HOW a pinhole creates an image. Its principle is the same as that of a lens. FIG. 15

the picture A and B represent two points of a lighted candle, C the pinhole and D and E the image on the screen. Now while light sends out rays in every direction, each ray moves in a straight line and it must, therefore, be clear that only the ray sent out from the point of the flame at A which is in a straight line with the pinhole C can pass through it and, hence, it must reach the screen at D; in the same way, the ray that starts from B which is in a straight line with C can only pass through it and this will reach the screen at E.

### The Size of the Image Formed

The size of the image of an object depends upon the distance that both the object and the screen are from the pinhole. To prove this, you need only to move the screen back and forth. The farther away the screen is from the pinhole the larger will be the image and the fainter it will be. This increase in size is due to the fact that the rays of light from the object which pass through the pinhole diverge on leaving it, the A D ray (see Fig. 15) moving down and the B E ray moving up. The reason the image decreases in brightness as the size is increased is that the very small amount of light that passes through the pinhole emerging as a cone must spread over a much larger surface.

The following formula will give you the size of the image at any given distance:

$$\frac{\text{Length of Image}}{\text{Length of Object}} = \frac{\text{Distance of Object from pinhole}}{\text{Distance of Image from pinhole}}$$

or in other words, you divide the length of the object by the length of the image, and this equals the distance of the object from the pinhole divided by the distance of the image from the pinhole.

### Why a Square Hole Forms a Round Image

Aristotle, as you may recall, noticed that when the image of the sun came through a rectangular opening in the leaves of a tree under which he was rest-

(Page 88, please)

# CALCULATOR FOR LENSES OF 5¼-INCH (13.5 CM.) FOCAL LENGTH

MINICAM'S

CLOSEUP  
CALCULATOR

DIAPHRAGM

READY FOR USE—SIMPLY CUT OUT AND PASTE ON CARDBOARD

**T**HIS CALCULATOR dial provides a quick method of determining change in effective aperture, exact lens-to-object distance, and correct bellows extension when using a 5¼-inch (13.5 cm.) lens for subjects between 60 inches and 5⅞ inches from the camera. A dial for use with 6-inch (15 cm.) lenses will be published in a future issue of MINICAM PHOTOGRAPHY.

The following examples illustrate some of the uses of the calculator:

**PROBLEM:** A 5¼-inch (13.5 cm.) lens is used to photograph an object 11 inches away. What bellows extension is required?

**ANSWER:** On Scale "B" of the dial set the arrow opposite the lens-to-object distance, 11 inches. On scale "A," opposite the arrow, read 10 inches. This is the bellows extension required to focus the object sharply.

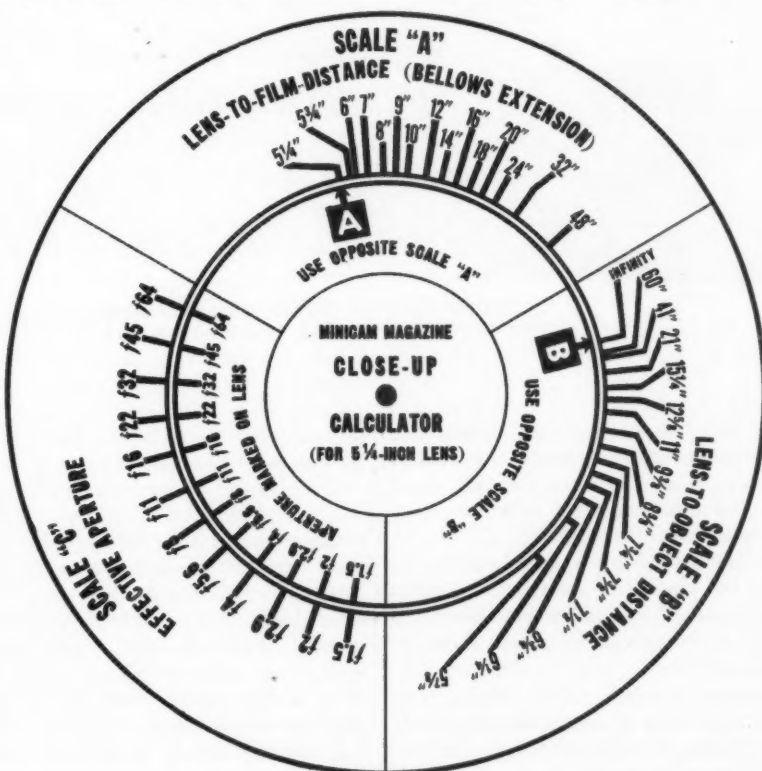
**PROBLEM:** What is the effective aperture of a 5¼-inch lens used at a bellows extension of 10 inches, with the diaphragm set at f16?

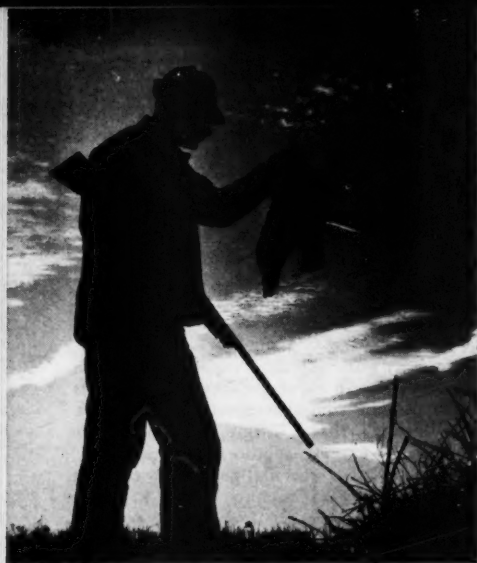
**ANSWER:** Keep the dial set for the first answer (11 inches on Scale "B" and 10 inches on Scale "A.") Locate f16 on the inner circle of Scale "C" and opposite this on the outer circle read f32, the effective aperture for this stop at a bellows extension of 10 inches. This effective aperture applies only to the reduced amount of light acting on the film.

**PROBLEM:** An exposure meter reading on the same close-up subject calls for 10 seconds at f32. What diaphragm aperture marked on the lens equals f32? If this marked aperture is used, a 10-second exposure is sufficient.

**ANSWER:** Keep the dial set as for the first two problems. On the outer circle of Scale "C" locate f32. On the inner scale, opposite this value, read f16. This is the aperture at which the lens must be set to permit the indicated exposure of 10 seconds at f32, under the conditions described.

For a more detailed description of the uses of this calculator, see MINICAM PHOTOGRAPHY, March, 1941, pages 54 and 55.





A **SILHOUETTE** makes a fine opening or closing shot for a story-telling series.



**STRIKE!** Action shots are the most difficult and most highly prized in any album.



## • TAKE YOUR CAMERA HUNTING AND FISHING

BY WALTER E BURTON

"UNCERTAINTY" by William Jung, awarded first prize in Brooklyn Edison Camera Club exhibit. Taken at 1/200 second, f/5.8.

**I**T'S NOT on record that anyone has ever succeeded in shooting a deer and a picture of it at the same time, or of filming the epic struggle of an oversize bass while negotiating the landing.

This Herculean trick might be worth trying, but an easier solution is to allot alternate days for hunting and filming, so that all attention can be concentrated on one task at a time.

A camera is bound to be a major item in the equipment of every camping, hunting or fishing expedition. Long after the pronghorn or the musky has been eaten or

framed, pleasant memories remain in the form of still or motion pictures, or both.

Photographic equipment for an outdoor trip should be kept as simple as possible. Main items are the camera, preferably a small one, and about twice as much film as you think you will need. Don't forget some Kodachrome. Protect the camera by a sturdy eveready case. Cover the lens with a cap when it is not in use. Take along a lens shade. And, finally, take a medium yellow filter, such as a Wratten K2, for registering clouds and reducing atmospheric haze.



**LEAPING LENA!** These unusual game fish pictures were taken at 1/1000 second, by Clement Crouch.

**TAKE** shots of where you stay. By Elizabeth Hibbs.

If you have room you may include some "peanut" flashbulbs and a flashgun or synchronizer. You may find use for an extension cord that permits remote-control flash shots of elusive game.

### Protecting Equipment

Protection of camera and equipment is important, particularly if you are going to travel by canoe or boat. Zipper bags made of oiled silk, Pliofilm, or Koroseal silk, and originally intended for holding vegetables stored in a refrigerator, make ideal dust- and water-resisting protectors for camera and accessories. For a canoe trip, an empty 5-lb. sodium carbonate can or other container with a tight-fitting lid will protect camera and accessories. It should be big enough to float when fully loaded, if accidentally dropped overboard. (Note: A common habit of fishermen and hunters is dropping cameras into lakes and rivers.)

Take groups of pictures that can be arranged in a series. Be on the lookout for those trivial incidents which really give you the "feel" of a trip. Shoot the start of the trip, leaving home, loading the canoes, baiting hooks, cleaning guns, and

so on and so on. Take some landscape shots wherever you go, so you can settle arguments later about the nature of the terrain. Use a medium yellow filter for these, so clouds and sky will register. The filter reduces atmospheric haze, and improves rendering of leaves and grass. Orthochromatic film such as Verichrome, Plenachrome, etc., is excellent for such work. For taking night scenes around a camp fire, use one of the high-speed panchromatic films such as Eastman Super XX, Agfa Superpan Press, or Dupont Superior III.

Usually you can make several excellent camp shots in the daytime, but flash equipment makes your coverage a lot more complete. Even if you don't own a synchronizer, you can get some fine night shots with a hand reflector that takes regular flashlight batteries. Put a lamp behind a campfire log (when the fire is out), and shield the lamp so no direct light can reach the lens. The result will be a realistic campfire scene.

### Silhouettes Are Easy

Try a few silhouettes. This is often a  
(Page 91, please)

**BUILD IT YOURSELF**

## STORAGE CABINET FOR "KITCHEN" DARKROOM



BY A. GEORGE HOWES  
ILLUSTRATED BY THE AUTHOR

**A** CABINET "CUSTOM - tailored" to fit your own equipment is the ideal solution for the bathroom and kitchen sink darkroom addict's storage problem. This puts an end to squeezing the enlarger into the broom closet and stacking trays and easel under the bed or on a pantry shelf. Equipment and materials are kept dust free with no danger that a careless swipe of broom or dust mop will crack a film tank or chip a pet enamel tray.

First list and analyze all your equipment. Group it into five general classifications: (1) Paper, film, negative files,



EQUIPMENT and materials used by amateur without a regular darkroom are kept in one made-to-order storage cabinet FIG. 1

CABINET has ample room for both darkroom and picture-taking necessities. FIG. 2

and odds and ends, (2) Camera and accessories, (3) Large bottles of stock solutions, (4) Enlarger, tripod, trays, etc., (5) Small bottles, developing tank, etc.

Measure the enlarger, largest bottles, jugs, trays, and negative files. Determine the height needed for long narrow items such as tripod, light stands, etc. Find the depth needed for the enlarger base, easel, trays, ferrotype plates, blotters, and all other important large items.

Decide on tentative positions for the various items and sketch several shelf layouts to visualize different arrangements. Equal compartments are not essential. In most cases the enlarger presents the most difficult problem because of its shape. Plan the cabinet around it.

(Page 86, please)



CLOSED, cabinet is attractive piece of furniture. FIG. 3

SHELF plan is determined by enlarger shape. FIG. 4





"AIRGRAPH" letters from British troops in the Middle East are copied on miniature films to save weight and space in the mail planes.



AN automatic printer (at left) enlarges the films on long rolls of paper developed in the tank above. Letters are then forwarded.

## PHOTOGRAPHY GIVES WINGS TO SOLDIERS' MAIL

**W**HEN THE BRITISH Tommy in Egypt or Syria sits down to write a letter to the folks at home he can use one of the most novel postal services yet developed. For three cents he sends an "Airgraph" letter by mail plane, certain that within two weeks his mother or sister or sweetheart will be reading it. Ordinary letters have to take a treacherous sea route and may be months in reaching their destination if they ever get there.

He writes or types his "Airgraph" letter on a special 8x11-inch form, placing the address in block letters in a panel at the bottom of the sheet.

This letter is copied on 16mm. film. A 50-foot reel contains about 360 negatives. In this form negatives of 4500 letters weigh only a pound. The same number of original letters would weigh nearly 150 pounds. Thus, through photography, bulk and weight are reduced to make an

(Page 86, please)

**DRUM** dryer speeds up the finishing process.

**LETTERS** are then cut apart and sorted.



## Motion-Picture Camera Shutter Speeds

The following table shows shutter speeds for motion-picture cameras exposing 16 frames per second. Variation in speed depends on size of shutter opening. When using a multi-speed camera, remember that the exposure is proportional to the number of frames per second, with 16 frames as normal. Thus, at 8 frames per second, the exposure time will be twice normal; at 64 frames, one-fourth normal. That is, if the normal exposure is 1/30 second, at 8 frames exposure will be 1/15 second, at 64 frames it is 1/120 of a second.

Knowing the shutter speed of a motion-picture camera makes it easy to determine lens aperture with an exposure meter not calibrated specially for cine work.

Make of Camera	Exposure Time in Seconds
Agfa Model B	1/30
Bolex	1/30
Cine Ansco Model B	1/30
English cameras, usually	1/32
DeVry	1/30
Eastman, all models	1/30
Filmo, all 70's Regular	1/30

Make of Camera	Exposure Time in Seconds
Filmo Golf 70	1/40
Filmo 71	1/40
Filmo 75	1/40
Filmo 121	1/30
Filmo 141	1/40
Filmo 8-mm., all models	1/30
Keystone late models A3	1/40
Keystone A7	1/40
Keystone 16B	1/50
Keystone K8, No. 872650 and greater	1/40
Keystone, other models	1/50
Paillard Bolex	1/30
Paragon	1/30
Revere	1/30
Simplex	1/40
Stewart-Warner 8	1/50
Stewart-Warner Hollywood	1/40
Stewart-Warner 532A	1/40
Sept	1/90
Univex	1/30
Victor, all models	1/30
Zeiss Movikon, shutter at 180 degrees	1/30
Zeiss Kinamo S-10-16	1/30

## Shutter Speeds at Various Shutter Openings and Camera Speeds

For 8mm. and 16mm. Cameras

The effective shutter speed of a motion picture camera depends on the velocity with which the film moves through the camera. Normal speed for silent films is 16 frames per second. For professional sound film, it is 24 frames per second.

The size of the shutter opening, measured in degrees, also controls shutter speed. Size of shutter opening is adjustable in some cameras.

Shutter Opening	CAMERA SPEED (Pictures per second)							Shutter Opening	CAMERA SPEED (Pictures per second)							
	8	12	16	24	32	48	64		8	12	16	24	32	48	64	64
204°	1/14	1/21	1/28	1/42	1/56	1/84	1/112	160°	1/18	1/27	1/36	1/54	1/72	1/108	1/144	1/144
205°								150°	1/19	1/29	1/38	1/57	1/76	1/114	1/152	1/152
								140°	1/21	1/31	1/41	1/62	1/82	1/123	1/164	1/164
190°	1/15	1/23	1/30	1/45	1/60	1/90	1/120	130°	1/22	1/33	1/44	1/66	1/88	1/132	1/176	1/176
180°	1/16	1/24	1/32	1/48	1/64	1/96	1/128	120°	1/24	1/36	1/48	1/72	1/96	1/144	1/192	1/192
170°	1/17	1/26	1/34	1/51	1/68	1/102	1/136	115°	1/25	1/38	1/50	1/75	1/100	1/150	1/200	1/200

NOTE: These are exact speeds and exposure times. For use with exposure meters, the nearest round number may be taken. Thus if the table gives 1/42 sec. as the exposure time at a given camera speed, 1/40 sec. may be used with the meter reading.

## Shutter Openings

For 8mm. and 16mm. Cameras

Bell & Howell 70 A	Simplex	160°	Victor	205°
to F	Keystone A-3 and A-7	160°	Filmo 8	205°
Bell & Howell 75	DeVry	160°	Keystone 8	140°
Bell & Howell 121,	Paillard-Bolex	190°	Cine Kodak 8	170°
141	RCA	205°	Stewart Warner 8mm.	115°
Eastman Cine Kodaks	Paragon	180°	Univex	170°

# PHOTO DATA

MINICAM  
PHOTOGRAPHY

CLIP SHEET FOR PERMANENT REFERENCE

## DEVELOPING AGENTS—METOL

Metol is one of the most important developing agents in use today. It is commonly employed with hydroquinone, the metol developing detail and the hydroquinone producing contrast. Metol is perhaps the photographic chemical with the most aliases: it is known by such names as Elon (Eastman), Pictol (Mallinckrodt), and Genol.

Chemical name and formula: Mono-methyl-*para*-aminophenol sulphate. (NHMe, C<sub>6</sub>H<sub>4</sub>, OH)<sub>2</sub>.H<sub>2</sub>SO<sub>4</sub>.

Properties: White, crystalline powder of good keeping properties. Dissolves best when no other chemicals are present, or when only a fraction of the sulphite in a developer formula has been dissolved. As a developer, metol is vigorous, produces detail quickly but builds up contrast slowly. Used alone as a developing agent, it produces negatives having good gradation and shadow detail, and fairly fine grain. Metol will develop any latent image that is present in the emulsion of a negative. Metol tends to produce fog in negatives. Potassium bromide will not reduce this entirely, and citric acid is considered more effective when added as a trace. Also, the addition of hypo in small

amounts eliminates fog; but it also slows development and increases contrast.

Common criticism of metol: This chemical is blamed for a lot of irritating action on the human skin, and this gave rise to the term "metol poisoning." However, it has been shown that the poison action comes, not from the metol, but from traces of an impurity, a form of *para*-phenylene-diamine. Well-purified metol, as any of the standard brands, is non-poisonous.

Typical developer using metol:

Soft-working formula for any paper (recommended only for emergency use).

Stock solution—

Water .....	20 oz.
Elon (or other form of metol) .....	55 gr.
Sodium sulphite .....	1 oz.
Sodium carbonate .....	3/4 oz.
Potassium bromide .....	27 gr.

To use: Water, 3 parts. Stock solution, 1 part. Temperature, 70° F.

Suggested quantity of metol to purchase: 1 oz. for limited work; 1/4 lb. for all-around use in average darkroom.

## DEVELOPING AGENTS—HYDROQUINONE

Hydroquinone is to metol as Mutt is to Jeff. That is, the two usually work together. Hydroquinone develops contrast. It builds density rather slowly except when a strong alkali is present in the solution. Thus, in a metol-hydroquinone developer, long development produces a more contrasty negative by giving the hydroquinone time to act. Hydroquinone is known by such names as quinol, and it sometimes is spelled with a "l" or "ch" instead of "qu".

Chemical name and formula: *p*-dihydroxybenzene C<sub>6</sub>H<sub>4</sub> (OH)<sub>2</sub>.

Properties: A grayish-white chemical composed of small, needle-like crystals that have a brilliant luster. In solution it oxidizes readily to form a yellow or brown color. When this color is light, properties of the developer are not affected appreciably. Presence of a small amount of acid retards this oxidation.

Hydroquinone is a clean-working developer, with a low development factor. Used preferably at temperatures no lower than 65 deg. F. At 60 deg., the action is very slow, and below 40 deg., it stops altogether. Potassium bromide acts as a strong restrainer of the developing action, and should be added with care. To prevent yellow staining, do not force development of negative or print, and rinse well before placing print in the fixing bath, which preferably should be acid.

Hydroquinone alone is employed in developers for producing lantern slides having warm

tones, for developing some printing-out papers, and for pictures of line drawings where extreme contrast is desired in print and negative. The normally slow action and low development factor of this chemical can be accelerated by addition to the solution of the dye phenol-safranine in very small traces. This converts the hydroquinone into a developing agent that resembles metol and that brings up detail soon after development starts.

Storage: Hydroquinone should be stored in well-corked bottles or tight-lidded cans in a cool, dark place.

Typical developer using hydroquinone alone: Eastman D-8 developer for very high contrast on process films and plates, and on Kodak lith stripping film:

Stock solution—

Water .....	24 oz.
Sodium sulphite, desiccated .....	3 oz.
Hydroquinone .....	1 1/2 oz.
Sodium hydroxide (caustic soda) .....	1 1/4 oz.
Potassium bromide .....	1 oz.
Water to make .....	32 oz.

Handle the caustic soda carefully, and dissolve it only in cold water. Keep it away from skin and clothing.

To use, dilute 2 parts stock solution with 1 part water. Develop in tray for 2 minutes at 65 deg. F. Be sure to wash negative thoroughly before fixing.



# Being Your SNAPSHOTS AND



**PORTRAIT.** Miniature Speed Graphic, Eastman Panatomic X, two No. 2 floods and spotlight on hair, f/8, 1/25.

**EVERYBODY, MYSELF INCLUDED**, tends to forget that "being critical" does not necessarily mean being *adversely* critical. Criticism should and does mean comment that dishes out both praise and scallions, according to the critic's reaction to the job under scrutiny. So...

● **PORTRAIT**, by W. P., Darby, Pa., is an excellent photograph. The print shows clearly that he handled his lights so that we actually get skin tone and texture, along with that very charming smile. My only concern is about the composition. It looks like something cut out of a larger picture, without adequate care. The forearm (I assume that's what it is) across the bottom of the print has little meaning. We should either see more of it or less. I'm not really worried, however, for anyone who makes as good a photograph as this can certainly catch up in his composition in time to turn out some really swell stuff. Go to it, W. P.

● **WINTER NIGHT**, by G. L. B., New York City, is a good try, but I feel it misses. Here's why. (No poetry intended.) Mr. G. L. B. liked the looks of this vista, from Central Park over a frozen pond toward the brilliant street and the buildings beyond. And there's no reason why he shouldn't. It's interesting. But a 9 minute exposure at f/16 on Super-XX was too long. Note the completely burned out highlights along the street; there's even halation in the lighted windows. It's probable that a 2

or 3 minute exposure would have been adequate. But there's another consideration; by shifting his vantage point a little it's very likely that some sort of foreground interest could have been created—a tree, a bench, or something of the sort to give depth and meaning to the whole picture. A flash bulb, shot off at the left or right during the exposure, could have revealed something of interest to break up the foreground and that solid horizontal line across the midriff of the scene. However, a shot of a frozen lake is a kind of comfort at this time of year. I only wish that the ice were more definitely icy.

● **SWEATER GIRL**, by M. S., of Gardner, Mass., comes very close to complete success. In fact, if his model likes it, his success is complete. But maybe she objects to it, and on grounds which are no concern of Will Hays who, as you remember, thinks sweater girls are dangerous. The model, for example, has some right to complain about that shadow which makes

**SWEATER GIRL.** 3/4x4/4 Speed Graphic. Agfa Triple S Pan. Yellow (K2) filter. f/12. 1/100.



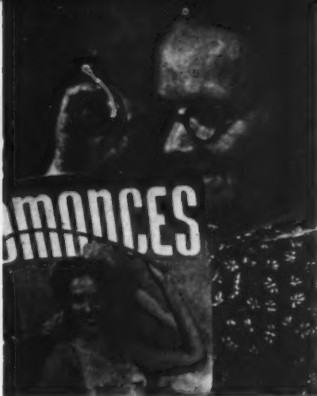
**WINTER NIGHT.** Eastman Super XX film, f/16, 9 minutes. Print on Defender Velour Black.



# Critical

HOW TO BETTER THEM

**ROMANCING.** Rolleicord camera, Agfa Superpan Supreme film, two No. 2 floods,  $f/11$ , 1/25 second.



a Hitlerish smear under her nose and nicks her upper lip. Personally, I don't enjoy the way the lower arm repeats the pattern of the upper; it looks a little self-conscious. Photographically, it's a very nice piece of work.

● **BOY AND BLOSSOMS**, by J. L., Kansas City, Kans., is a perfect example of one of the troubles that beset most relatively new picture makers. It was made with a fixed-focus camera, which is a remarkable instrument capable of doing wonders with subjects ten feet or more from the camera. So every such camera user tries to use it at five feet or less. And this is what happens. The foreground subject (which was only three feet away) is completely out-of-focus. There's a simple little portrait attachment which permits closeups with fixed focus cameras; lacking such an accessory, make it a rule to back off at least four paces. Then, what you lose in close-up-ness you gain in sharpness and clarity. And you

**BOY AND BLOSSOMS.** No. 2A Hawkeye camera. Agfa Plenachrome film,  $f/11$ , 1/50 second.



can then enlarge your subject to gain back your desired close-up.

● **ROMANCING**, by H. B., Cicero, Ill., rates a cheer from this critic. For one thing, it has an idea, an idea that's partly sentimental, partly ironical. And it is handled with perfect economy. There is just exactly enough included in the picture to tell the intended story—and the story does definitely get told. If any more were included, emphasis might easily be lost and, with it, the idea behind the picture. Photographically, there are points that might be quibbled over, but an idea is worth tons of technique. So, I'll take it as it is, and like it.

● **IN THIS CORNER**, a boxing picture by J. D. G., demonstrates one of the temptations to which new owners of relatively fast-lens cameras succumb. Because they are able to make a picture at all under such conditions as these, they feel that any such picture must, therefore, be pretty hot. But no. The press has so accustomed us to good, clear, sharp, fight pictures that we expect more than this picture gives.

If this picture's reason for being is the fact that it shows what appears to be a low blow, that's something else again. In that case it's a record, evidence, and useful as such. But—the picture wouldn't be here, if that were the situation. So, J. D. G., expect and get more from your camera. It's there to be had.

**IN THIS CORNER.** Miniature camera, Eastman Super XX film,  $f/3.5$ , 1/25 second exposure.





LOOK AT THE  
PICTURES AND CHECK  
YOUR ANSWERS

# K A M E R A

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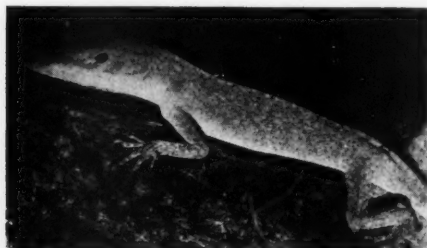
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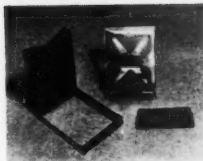
**A** H, AUGUST, at last! June wedding stuff all printed and done with. Fourth of July shots of fireworks and the picnic are test-printed and the good ones picked out. They look good, too.

Still, here's August with a lot of vacations not yet over and plenty of that actinic, inexpensive sunlight left for picture getting.

While that last batch is in the wash, try your hand at these. Maybe you'll save a shot tomorrow by brushing up on a point today. Anyway, it's fun.



**1** THIS little fellow has a dry scaly skin. To render this texture effect, would you  
☐ Grease him? ☐ Use a flash bulb at the camera? ☐ Dip him in water? ☐ Cross-light him? ☐ Snap him on a cloudy day?

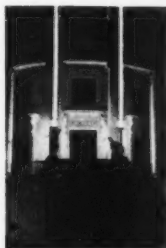


**2** THIS clue at the scene of a crime led to the arrest of a man who owned only a 35mm. camera. Did the cops make a mistake? ☐ Yes. ☐ No.

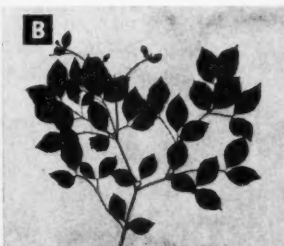
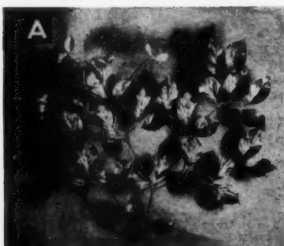


**3** IF prints from all negatives on a roll of film show these markings, it means ☐ Bellows leak. ☐ Unsafe film window.

**4** THIS shot is one of several time exposures made of the scene at night. The two white streaks were caused by  
☐ Improper shutter operation.  
☐ Lens obstruction.  
☐ Camera movement.



**5** IF this were a color transparency, the white sail would be represented by a  
☐ Clear area.  
☐ White opaque area.  
☐ Silver area.



**6** HERE are three shots of the same leafy branch. What is the least number of back-grounds needed to give this variety of effects? ☐ Three. ☐ Two. ☐ One.

# K W I Z

CONDUCTED BY  
VICTOR H. WASSON

TEST YOUR  
PHOTOGRAPHIC  
KNOWLEDGE

?

?

?

?



- |                                  |                                |                                |                                 |                                |                                  |
|----------------------------------|--------------------------------|--------------------------------|---------------------------------|--------------------------------|----------------------------------|
| <input type="checkbox"/> Sepia   | <input type="checkbox"/> Green | <input type="checkbox"/> Blue  | <input type="checkbox"/> Sepia  | <input type="checkbox"/> Green | <input type="checkbox"/> Blue    |
| <input type="checkbox"/> Magenta | <input type="checkbox"/> Blue  | <input type="checkbox"/> Green | <input type="checkbox"/> Yellow | <input type="checkbox"/> Sepia | <input type="checkbox"/> Magenta |

**7** BELOW each picture check the color of toner or developer-toner that generally produces the most appropriate color effect for each of these typical subjects.



**8** THERE is certainly a difference between these two prints of a jovial gent. "A" is a normal print. "B" was ☐ Hypersensitized. ☐ Reversed. ☐ Printed from two negatives. ☐ Solarized. ☐ Printed from a diapositive.

**9** WE printed a Kodachrome on standard enlarging paper and naturally got this negative image. What was the color of the girl's dress?

- ☐ Red.  
☐ White.  
☐ Blue.



**10** TO make up a sepia re-developing toner, which three of the following chemicals are required?

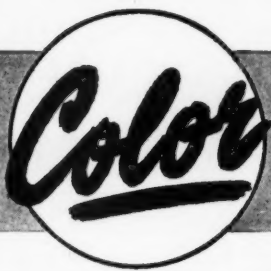
- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Potassium Ferricyanide. | <input type="checkbox"/> Potassium Bromide. | <input type="checkbox"/> Sodium Sulphide. |
| <input type="checkbox"/> Hypo.                   | <input type="checkbox"/> Potassium Alum.    | <input type="checkbox"/> Gold Chloride.   |
|  |   | <input type="checkbox"/> Acetic Acid.     |

## ANSWERS

Don't peek! Check your questions before consulting these answers.

1. Cross-lighting best renders textures of this sort.
2. This is the metal container for a film pack. The gum-shoe was wrong.
3. The position of this light streak indicates that the film peep window was not safe. The horizontal fog line formed as the film was wound. The fog spread crosswise of the film while in position to be exposed.
4. A common error in making time exposures is to think the shutter was set on Bulb and forget to close it after the exposure. When the film is wound with the shutter open, lights in the scene produce streaks on the negative.
5. In transparencies, clear areas represent pure white.
6. Only one background was used. In "A" ordinary frontal illumination rendered the actual gray of the background. In "B" a strong light on the same background gave a near-white effect. In "C" shielding the background from the light produced a near-black effect.
7. Generally speaking, prints of carved wood ("A") are best toned sepia; pictures of foliage ("B") are appropriately toned green, and sky and cloud areas ("C") look best toned blue.
8. "B" was solarized. The partially developed print was exposed to white light and then development was continued.
9. Red. A white or blue dress in the transparency would have transmitted light that registered on the enlarging paper. The red dress acted as a safelight and prevented that area from printing.
10. The three necessary chemicals listed are Potassium Ferricyanide, Potassium Bromide, and Sodium Sulphide.

Score: 5 correct is fair; 6 correct is good; and 8 correct is excellent.



# PHOTOGRAPHY

QUESTIONS AND ANSWERS

**C**OLOR IS THE coming thing, they say. It's *here*, we say. Remember the thrill you got from your first snapshots? Can you recall the spine-tingling pleasure you felt when you turned on the white light and examined the first roll of film you developed yourself? Or the first print you watched come to life in the developer, in the yellow glow of the safelight? Those thrills are pale imitations of what's in store for you when you see your first *color* pictures.

This column is an open forum on color photography. The questions answered in this issue are typical of those asked by amateurs everywhere who want to make color shots. Those who have taken several rolls of color shots are asking questions too. They want to improve their color pictures. Everybody is interested in the latest developments in color materials and the most successful methods for making good color photographs.

**Does Color Film come in sizes other than 35mm.?**

Yes. At present you can get the Bantam size (828), as well as cut sheet film in sizes  $2\frac{1}{4} \times 3\frac{1}{4}$ " and larger. There are also adapters on the market that permit the use of the Bantam roll in many cameras taking larger size roll film. The price of these adapters is nominal and the results are splendid.

**What kind of camera do I need to make color shots?**

Practically any kind of camera that takes or can be adapted to take 35mm. or Bantam roll film, or the cut sheet film ( $2\frac{1}{4} \times 3\frac{1}{4}$ " and larger) now on the market, is suitable. More important than the "box" is the type of lens on the camera.

**What kind of lens do I need for color shots?**

An anastigmatic lens with a speed of  $f/8$  will produce good color snapshots outdoors in sunlight. A faster lens permits working under less favorable conditions.

**Why can't I use some other kind of lens?**

Single-element lenses, such as are found on inexpensive box cameras, and the Rapid Rectilinear lenses found on some of the less expensive folding cameras are not designed to focus different colored rays of light in a single plane. This lack of "color correction" produces unsharp color pictures that are seldom pleasing to the eye.

**What kind of shutter do I need?**

Since an exposure of  $1/50$  at  $f/8$  or  $f/5.6$  is a good average shutter setting for outdoor color snapshots in sunlight, any shutter that has this speed may be used.

**I am an ordinary amateur. Is it necessary for me to have a course in instruction to make color shots?**

No. In addition to the suggestions on composition and the accurate guide to exposure supplied with each roll or package of color film, the information in this department will help you over the "rough spots." Carefully follow the instructions that come with the color film, and you should be able to get perfect transparencies on the first try.

**This is your column. Bring your color problems to this department. Address Color Questions Dept., Minicam, 22 East 12th St., Cincinnati, Ohio.**



# Get Life into Your Pictures with a **GRAFLEX!**



**A** GRAFLEX with its full-vision ground-glass focusing is ideal for pictures like this one by Fred C. Albert—a prize-winner in the Graflex Golden Anniversary Picture Contest. Make a Series B Graflex your next camera. Priced from **\$96** complete with Kodak Anastigmat  $f/4.5$  lens. Down payment through your Dealer as little as **\$20**.

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Contains full information about Graflex American-made Cameras. Get it at your Dealer's or from us. Paste coupon—of write your request—on penny post card if you wish. Folmer Graflex Corporation, Dept. MC-29, Rochester, N. Y., U. S. A.



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NAME

CITY  STATE



## PRODUCTS

### Gearmaster Pan-Tilt Head

The Gearmaster Pan-Tilt head (\$16.00) operates entirely with gears and has no tilt handle to interfere with cameraman's access to the camera's controls. A 17-month survey of the camera field revealed that 95% of the photographers questioned objected to the long handles found on a majority of pan-tilt heads. Miniature camera users, especially, objected to the handles saying that it interfered with convenient use of viewfinder and rangefinder. Many stated a preference for a head with no



long horizontal handle at all.

The makers of the Gearmaster are taking in tripod heads as trade-ins on the Gearmaster. Allowances range from 50c to \$5.00 on each head, depending on the make, size and condition.

Further information from the manufacturer: Photo Engineering Co., 2210 Sunset Blvd., Los Angeles, Calif.

### Color Separation Negatives

A coupon in the Iso-Color Kits enables each purchaser of a kit to secure a set of separation negatives from a Kodachrome transparency for 50c. The coupons are valid until August 31.

The complete Iso-Color Kit for making natural color prints costs \$5.95, and contains detailed instruction manual.

Further information from: Spectrum Products Co., Inc., 33 West 60th St., New York, N. Y.

### DeJur's Versatile Professional Enlarger

The Versatile Professional Enlarger (about \$89.50) accommodates all negatives up to 4x5" and has all features now incorporated in the DeJur Versatile II. In addition the Professional Enlarger also has distortion control.

A 13" bellows accommodates an extensive range of lenses, and two 6½" condensers, including the heat-absorbing filter, complete the illumination system.

Further details and complete specifications from: DeJur-Amsco Corp., Shelton, Conn.

### Wabash Daylight Blue Superfloods

Three Wabash Daylight Superflood Photolamps, with light outputs from 6100 lumens to 23,500 lumens, eliminate the use of correction filters when taking indoor color pictures with regular Professional Daylight Type Kodachrome. The bulbs are made of a natural daylight blue filter glass that corrects the spectrum of the floodlamps to approximate that of daylight.

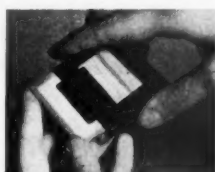
Inside frosting provides a soft, diffused light suitable when the lamps are used to supplement daylight.

Characteristics of the three lamps are as follows:

	No. B1	No. B2	No. B4
Watts	250	500	1,000
Life in Hours	3	8	10
Approximate Lumens	6,100	12,000	23,500
List price	30c	60c	\$1.75

### Vest-Pocket Kodachrome Viewer

The Gem Minilum Pocket Viewer (\$1.50) for 2" x 2" Kodachrome and black



and white slides, operates on a small battery. A slight pressure of the finger lights up the bulb behind the opal glass. Slides are easily inserted and removed. Viewer is made of metal.

Further information from: Weimet Co., 112 W. 44th St., New York, N. Y.

### 50% More Light from No. 11 Photoflash

The G-E Mazda synchro-press photoflash lamp No. 11, which replaces the foil-filled No. 11A lamp, contains shredded foil and has about 50% greater output than the No. 11A. Lumen seconds of the No. 11 are 28,000 to 32,000; peak lumens are 2.4 million.

Changes in the ratings of other units in the G-E Mazda Photolamp line are as follows:

OLD VALUES		
Type	Peak Lumens	Lumen Seconds
SM	500,000	2,500 to 3,000
No. 5	1,200,000	16,000 to 18,000
No. 50	5,500,000	100,000 to 120,000
NEW VALUES		
Type	Peak Lumens	Lumen Seconds
SM	700,000	4,500 to 5,000
No. 5	1,200,000	17,000 to 19,000
No. 50	6,000,000	110,000 to 125,000

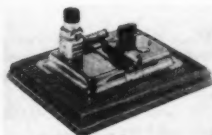
Made by General Electric Co., Nela Park, Cleveland, Ohio.



## New PRODUCTS

### Seemann Splicer Improved

The Seeman Splicer for both 8mm. and 16mm. films (\$3.95) has tension pins that hold the film taut in place and insure accurate alignment of the splices. A single-operation pressure bar permits fast and permanent splices.



The dry scraper for removing emulsion gives a clean splice when Kodachrome films are being edited. Register pins, on which all 8mm. film fits regardless of how it comes off the reel, eliminate turning

the film over when splicing. The cement bottle is anchored in the base and cannot be upset.

The splicer is mounted on a hardwood base, and is also supplied in the Seeman Editeer unit (\$13.95). The Seeman Splicemaster (\$7.95) is a junior editing outfit also made by the same company.

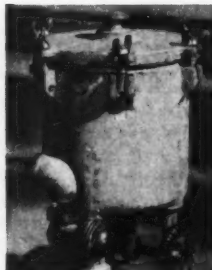
Further information from: Wholesale Photo Supply Co., 6628 Santa Monica Blvd., Hollywood, Calif., and 86 Third St., San Francisco, Calif.

### Complete Mounting Outfits

Sipco Mounting and Titling Outfits contain all necessary items for mounting prints in album or scrapbook. Outfit No. 1, contains a 3-ounce jar of Sipco Photo Paste, a bottle of easy-flowing white ink, a stub pen for lettering, a bowl-point pen for writing, and a paste brush. The white ink neither rubs off the print nor discolors. Prices and further information from Sipco Products Co., 134 St. Paul Street, Rochester, N. Y.

### Water Filter

The Crystal Fluid Filter removes impurities from the darkroom water supply, eliminating the necessity of sponging negatives to remove sediment or small particles of grit before drying. The filter is made in sizes to furnish from 150 to 500 gallons of water per hour. These sizes supply enough filtered water for average commercial finishing plants.



The filter is of sturdy construction, and installation is easy.

Prices and further information from: The Crystal Fluid Filter Company, Milwaukee, Wisconsin.

## Brand New Hard-to-Find CAMERA & LENSES

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Rolleicord II, Zeiss Triotar F3.5, case.....	98.50
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Leica III chrome, no lens.....	114.75
Leica Standard Black, no lens.....	45.00
Leica Standard Chrome, no lens.....	54.00
Leica II Black, no lens.....	99.50
Dollina II, Xenar F2.8.....	51.75
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16 on 120 Perle Precision, F2.9 C. R.....	39.50
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35mm Welfi, Xenon F2 Compur R.....	96.00
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Super Dollina Xenar F2.8.....	72.00

### LEICA LENSES

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50 mm Elmar .....	F3.5 .....	66.00
50 mm Hektor .....	F2.5 .....	63.00
50 mm Summar .....	F2 .....	99.00
50 mm Summilux .....	F2 .....	150.00
50 mm Xenon .....	F1.5 .....	186.00
73 mm Hektor .....	F1.9 .....	180.00
90 mm Elmar .....	F4 .....	87.00
90 mm Thambar .....	F2.2 .....	156.00
135 mm Hektor .....	F4.5 .....	132.00

9/12 Bess Bess, 5 1/4" Zeiss F4.5 Comp. ....	61.60
9/12 Bess Bess, 6" Zeiss F4.5 Comp. ....	68.00
9/12 Ideal 8, 5 1/4" Zeiss F4.5 Comp. ....	135.00
9/12 Ideal 8, 6" Zeiss F4.5 Comp. ....	140.00
3 1/4 x 4 1/4 Speed Graphic, 5 1/4" Zeiss F4.5 Compur .....	119.00
4x5 Speed Graphic, 5 1/4" Zeiss F4.5 Compur .....	119.00
4x5 Speed Graphic, 6" Zeiss F4.5 Compur .....	127.50
4x5 Graphic View Camera, no lens.....	69.50
2 1/4 x 2 1/4 Kerasite Reflex Model II Radionar F2.9.....	90.00
2 1/4 x 2 1/4 Kerasite Reflex Model II Tessar F2.8.....	128.00
Exakta V.P. Jr. F3.5.....	49.50
Exakta Model B Biotar F2.....	195.00
Kodak 35 Range Finder F3.5.....	47.50
Bantam Kodak Special Anast. F4.5.....	22.50
Super Sport Dolly, Tessar F2.8.....	44.00
Super Sport Dolly, Xenar F2.8.....	58.00

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# VICTOR

## INTENSIFIER

[84]

### Textilex Quick Film Dryer

Textilex is an insoluble, lintless paper that quickly removes surface moisture from negatives for rapid drying without resorting to sponging. The paper is supplied in 62" strips 5" wide (Tube of 5 strips, 40c) for roll film and in 8½x10½" sheets for drying cut sheet film (package of 12 sheets, 30c).

Roll film is rolled off the reel directly onto the 5-strip thickness of Textilex. The film is left in the roll for 30 seconds and then removed and hung up to finish drying.

For cut films, the excess water is shaken off and the wet negatives are then placed between layers of Textilex and the sandwich lightly pressed with the palm of the hand or roller. Negatives are then hung up to dry.

Further information from: Raygram Corp., 425 Fourth Ave., New York, N. Y.

### Index of Photographic Literature

A complete card index of photographic literature published throughout the world is being compiled and kept up-to-date by students in the Department of Photographic Technology at Rochester Athenaeum and Mechanics Institute, Rochester, N. Y. The file will list all published papers and abstracts of speeches in the field of photography. The project is part of a regular course in photographic literature included in the department's three-year course.

### BOOKLETS AND CATALOGS

**Choosing Your Camera** (24 pages, Free) discusses the factors that determine selection of picture-taking equipment for individual needs. Illustrations, charts and graphs, together with the text show clearly what is meant by "lens speed," how a shutter is synchronized with a flash lamp, etc. Box cameras, view or commercial cameras, press-type cameras and single-lens reflex cameras, as well as miniature cameras and twin-lens reflexes are discussed. Uses of each are given. Booklet also contains a card which can be exchanged for a set of Argus viewing filters at local Argus dealer. Copy from: Argus, Inc., Ann Arbor, Michigan.

**Kodachrome, A Data Book on Photography in Color** (32 pages, 25c) contains the latest information on the use of Kodachrome film. Types of Kodachrome, daylight pictures, exposure meters, lighting arrangements, special subjects, projection data, duplication, black and white prints and the Kodachrome process are fully discussed. Copy from local Kodak dealer or direct from Eastman Kodak Co., Rochester, N. Y.

**G-E Munda Photo Lamps, Circular P-187** (8 pages, Free) contains exposure guides for color photography by Photoflash and Photoflood lamps. G-E and Weston tungsten film speed ratings of roll and cut film are also furnished. Charts and illustrations describe the characteristics of each Photoflash lamp. In addition Photoflood lamps, enlarger lamps and other incandescent lamps for photographic work are illustrated and described. A chart shows the color temperature of various light sources. Copy from local G-E dealer or General Electric Co., Nela Park, Cleveland, Ohio.

**Those Who Know Choose Contax** (12 pages, Free) describes the construction and operation of the Contax Models II and III. Diagram shows the solid prism construction of the Contax rangefinder. Contax lenses and accessories for scientific work are described and illustrated. Copy from Carl Zeiss, Inc., 485 Fifth Ave., New York, N. Y. West Coast address: 728 S. Hill St., Los Angeles, Calif.

## SENSATIONAL FOTOSHOP Scoop NEW AMERICAN MADE 120 SIZE COUPLED RANGE FINDER CAMERA

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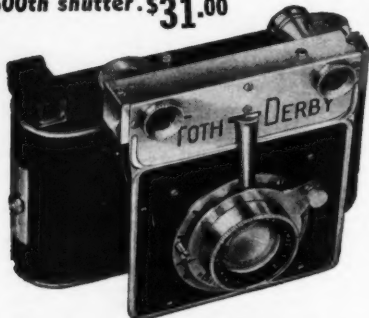
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## Photography for Soldiers' Mail

(Continued from page 73)

easily transported package that can be carried economically by plane.

After the reels arrive in England, photography takes over and returns these microscopic letters to readable form. First a continuous enlarger prints the negatives on long rolls of sensitized paper at the rate of one every second. A thousand letters are printed on a single roll.

The rolls are transferred to an automatic developing machine where fast-action "soup" brings them up at the rate of 40 per minute. After fixing and washing, the thousand-letter strip is dried on a rotating drum. About 8 feet of paper (roughly four letters) is dried each minute.

The dried rolls of prints are then cut up and sent to the Post Office for sorting. Each one is inserted in a special envelope, with a cutout window that fits over the block-lettered address. The regular postal service has charge of delivering these messages from Britain's fighting forces.

A testimony to the popularity of this unique service is the 50,000 "Airgraph" letters sent in a single shipment.

## Storage Cabinet

(Continued from page 72)

The cabinet shown in Fig. 2 (outside dimensions:  $48\frac{3}{4}$ " high,  $20\frac{1}{2}$ " wide and 19" deep) holds all the materials and equipment pictured in Fig. 1. For other types of equipment figure the minimum inside space required for each classification and then add  $\frac{1}{2}$ " for each shelf and partition and for the top and bottom of the cabinet. Allow  $\frac{3}{4}$ " for the two vertical sides and also for a base strip around the outside of the bottom. The door also adds  $\frac{3}{4}$ " to the over-all depth.

(1) The top shelf ( $10\frac{1}{2}$ "x $19$ "x $18$ ") is for dry materials such as film, paper, negative files, and odds and ends such as film clips, spotting pencils, magnifier, scissors, etc., which are kept in cigar boxes.

(2) A shelf  $10$ "x $12$ "x $18$ ", below and to the left of the top shelf, holds camera,

exposure meter, filters, lens shade, film holders, flash gun, flash bulbs, etc.

(3) The "wet" shelf for bottles of chemicals and solutions is 13" high to accommodate the gallon jugs used for stock solutions. Other dimensions are the same as for the camera shelf.

(4) The enlarger compartment also holds trays, tripod, safelight, towels and trimming board, as well as blotters and ferrotype plates. The enlarger post, measuring 36" high, reaches from the floor of the cabinet to the upper shelf. The space for this post is 6" wide and 18" deep, providing room also for a tripod and collapsible light stands, and similar long narrow pieces of equipment. The offset at the smallest shelf allows room for the enlarger head when lowered close to the enlarger baseboard.

The sides of the cabinet are of  $\frac{3}{4}$ " plywood, with  $\frac{1}{2}$ " plywood used for the back, top, bottom and shelves. Vertical pieces are mortised to support the shelves. Angle irons, brackets or small strips of  $\frac{1}{4}$ " wood running the depth of the cabinet can also be used as shelf supports.

A panel of  $\frac{1}{4}$ " plywood set into  $\frac{3}{4}$ x2" screening stock was used for the door. It swings on three brass hinges. The brass hasp matches the hinges. Several coats of clear water-resisting varnish completed the job.



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- Because at the end of each chapter the author has given a series of experiments that serve to amplify the text and make the knowledge an unforgettable part of the reader's learning.
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Cincinnati, Ohio

## Magic of Light

(Continued from page 68)

ing, the image on the ground was round nevertheless. He couldn't explain it. But today we know that regardless of the shape of the hole, it is still only a pinhole in relation to the sun, and therefore the real image it produces must of necessity be a round one.

## How To Control Light

Indoors, the control is pretty much in our own hands; there are many things we can do. Outdoors, however, the matter is not so simple. We cannot move the sun around the way we can a flood light, but there are other controls. The most important of these is patience. There is a right and a wrong time to photograph everything. Study each subject and try to imagine how it would look if lighted differently. If it isn't lighted the way you'd like it to be the first time you see it, go back another time when the light is more suitable, when the angle is better.

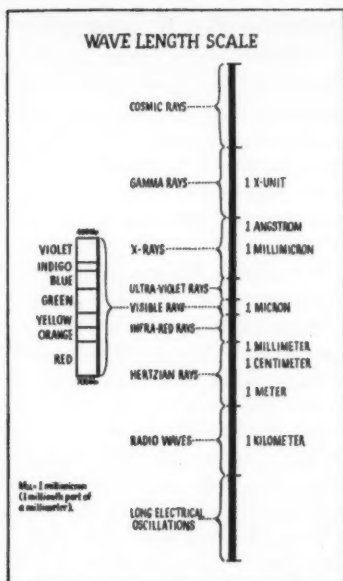
Alfred Stieglitz once spent months studying the effects of sunlight on an old stone well in a courtyard facing his home before he took even one picture. Another photographer has photographed one scene for four years under all conditions. Still he's not satisfied. He seldom snaps a scene as he first finds it. He tries to imagine how the scene would look earlier or later in the day, and then he goes back. The result is that his pictures have crashed every salon to which he has sent them.

Study and understand light, and you will be able to bring picture-taking under complete control. Fig. 16, on the following page, shows the various types of radiant energy.

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**LIGHT** is an electrical vibration operating through the ether. Other electromagnetic impulses include cosmic rays, gamma rays, X-rays, ultra-violet rays, infrared rays, radio waves. Light waves differ from these others only in wave length; gamma rays being among the shortest, radio waves among the longest, and light rays, the ones visible to the eye, being in between. Note from the above diagram that the visible rays play only a small part in the universe.

FIG. 16

### Cleaning Prints and Negatives

Lint, dust and finger marks are easily removed from prints and negatives by spreading a small amount of rubber cement thinly over the surface. Let it set for a few seconds, and then rub it off with your fingers. As the cement coagulates into small balls, all lint and dust is removed.

When used on negatives, this method eliminates finger marks, in addition to lint and dust, and makes the film sparkle. Be sure to remove *all* the rubber cement before printing from the negative.—*Andrew M. Lavish, Washington, D. C.*

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By David E. Scherman

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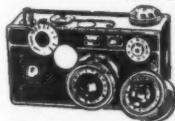
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Comes soon the fall and they'll be falling for my seductive bargains all over again . . . then sending them back next year to be traded in for something supposedly better. Can't figure it out but they've been doing it for a generation. Come on . . . get in line.



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## Vacation You'll Remember

(Continued from page 58)

be overexposed outdoors, even when the lens is closed down as far as it will go, unless this filter is used. The gray filter, having a factor of 4, permits you to use a film of Weston 100 speed outdoors as if its speed were 24, exposing at manageable lens stops. Without the filter, the full speed is available when light is bad.

If you are using color film exclusively, and have not a magazine loading camera, it is best to use Type A, indoor color film exclusively. This faster color film, is also more sensitive to blue, of which less is present in artificial light. To use the film in daylight, this excess blue sensitivity is cut down by means of a special filter—Kodachrome Type A Filter for Daylight. This filter also combines the haze filter and Wratten 2-A so that when it is in use, the two latter filters are unnecessary.

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36 EXP. ROLL  
DEVELOPED  
VAPORATED  
ENLARGED  
\$1.00



"Vacation?—no, just out on location."

## Hunting and Fishing

(Continued from page 71)

neat way of getting around a difficult exposure problem. A hunter standing in the door of his tent, gun ready, as the sun comes up or sets. A fisherman unsnarling a backlash at the edge of a lake across which the sun is setting. A hunter waiting in a doorway. These and similar situations make good silhouette material when lighting on the subject, as compared with background lighting, is rather poor. Give an exposure that is correct for the background.

At night, flash shots can be taken without a synchronizer. It is only necessary to have a reflector, with flashlight batteries attached (cost as low as \$1). The open-shut method is used. That is, the camera is placed on a firm support, the shutter set on "T" or "B", and opened. While the shutter is open, the flash button is pressed, and the shutter immediately closed. That is all there is to it. This open-shut method is for use only in relative darkness where there are no bright lights to affect the film while the shutter is open.

After the hunter or fisherman succeeds in getting a trophy, no matter how small it may be, he will want pictures of it—and of himself. Try to get a picture immediately after the prize is taken. Thus a moose or elk should be photographed where it fell. Make a few pictures showing the hunter or angler fondly examining his prize. Too many photographers simply stand the hunter and the moose together, and snap the shutter. The hunter later can be identified as the one with the silly grin. Try to avoid such stilted posing.

Have the hunter doing something and *not* staring into the camera. Perhaps he can be measuring the antlers of a deer, or the overall length of a perch. Anything to get some action and human interest into the picture. If occasion later arises to publish the picture in a magazine or newspaper, the editor will fall all over himself and his oversize waste-basket from sheer

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MADE IN U.S.A.

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joy, because you made a picture that doesn't have a stiff, posed air.

As for processing your vacation pictures, better let that go until you get back. You can, if you must, take along a tank and prepared solutions to use in test-developing film as a means of checking exposures.

Is that shutter finger itching for a camera? Good luck and good shootin'.

## Book Reviews

**AMATEUR PHOTOMICROGRAPHY.** By Alan Jackson. 48 unusual photographic illustrations, numerous diagrams and drawings 156 pages, cloth bound, 7 1/2 x 5 inches. The Focal Press, publishers. Distributed by Burleigh Brooks, Inc. Price, \$2.25.

This book is written by one who has been "through the mill", and whose experience in solving the problems of this fascinating branch of photography are liberally revealed. Even a very beginner, lacking expensive apparatus, should be able to produce good results, and in using the simple, home-made apparatus described, should gain an excellent groundwork for understanding the more complex methods described in later chapters.

Table of contents: Preface; A Few Words of Encouragement; Photography of Small Objects; Low Power Photomicrography; An Improvised Apparatus; The Optical Bench; The Negative and the Print; The Filter Makes the Picture; Working With A Miniature; Photomicrography in Colour; Special Fields; Micro-Preparations; Hints on the use of the Microscope; A Glossary of Terms; and Index.

**LIGHTING FOR PHOTOGRAPHY.** By Walter Nurnberg. 137 photographs, 156 diagrams, 176 pages, cloth bound, 7 x 10 inches. The Focal Press, publishers. Distributed by Burleigh Brooks, Inc. Price, \$3.50.

"Where to put the lamps" when taking portraits, groups, figure studies, nudes, still life, glass, metal or fabric? This book goes back to the technical roots of artificial lighting, reveals the advantages and limitations of different light sources, sketches the principles of their practical use and gives countless suggestions as to their individual application. Over a hundred examples analyze the lighting styles of master photographers.

Table of contents: (The Theory of Light) Light and the Photographic Emulsion; Light and the Subject; Electricity; Photographic Light Sources; Lighting Units; The Estimation of Exposure; (The Principles of Lighting) Building Up the Lighting; The Shadow; (The Application of Lighting) Light and Shadow As Applied to Face and Figure; Light and Shadow Applied to the Inanimate; Index.



## GADGETS, KINKS AND SHORT CUTS

### Spotlight Effects With Mirror

A shaving mirror set at an angle reflects the light from a flood lamp to imitate spotlight effects in portraits and table-top photography. The portrait (Fig. 1) shows a typical result produced in the manner described.



FIG. 1

Hang the mirror from a lamp stand or similar support or place it at a convenient height on a chair or table. Then arrange the flood lamp, in its reflector, so that its beam hits the mirror at about the angle shown by the arrow in Fig. 2. The average portrait subject should be about six feet from the mirror for maximum efficiency of the reflected light.



FIG. 2

Another method of using the mirror is to attach it to a clamp - on arm, obtainable from a local camera supply store. This permits attaching to a chair back or door in the desired position.

The circular mirror throws a beam of light resembling the familiar spotlight "circle" and the intensity of this "spot" depends entirely on the brightness of the source it reflects.

### INDEX TO MINICAM

INDEX FOR VOLUME 4 available soon. This covers issues from September 1940 to August 1941, inclusive. Articles are indexed by subject and author for convenient reference. Send 10c in coin or stamps for INDEX.

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## CONTEST CALENDAR

Open to	Subjects	Prizes	For copy of rules, write to	Contest closes
Anyone	Railroad and railroad model photographs.	\$30 in prizes. Winning photos become property of association.	Photo Contest, 321 Main St., Peoria, Ill.	August 25
Amateur photographers in Philadelphia, Pa., and Montgomery County only.	Any photographic medium except Kodachromes or hand colored pictures.	\$5, \$3, \$2 and 12 honorable mention awards.	L. Patton Hamilton, 520 Boyer Rd., Cheltenham, Montgomery Co., Pa.	September 30
Press photographers.	An event or scene showing cigars favorably.	\$50, \$35, \$25, \$15, and 10 awards of \$10 each.	Photo Judges, Cigar Institute of America, 430 Fifth Ave., New York City.	September 30
Camp Fire Girls.	Photographs expressing "America the Beautiful."	First prize, a trophy. Each contestant in the finals receives a national service honor.	America the Beautiful Committee, Camp Fire Girls, Inc., 88 Lexington Ave., New York City.	November 1
Anyone	"The Image of Freedom." Showing what America most deeply signifies to you. Longest side of print between 5 and 14"	100 prints will be bought at \$25 each.	Beaumont Newhall, The Museum of Modern Art, 11 West 53rd St., New York City.	August 15
Anyone. No picture eligible if exhibited prior to June 1, 1941.	Character studies, flowers, still life, portraits. Pictorial subjects taken in Illinois are given preference.	Silver cup and twenty silver ash trays.	White Fence Farm, Route 2, Lemont, Ill.	August 18
All photographers.	Any subject.	Over 50 merchandise prizes totaling \$1250 plus a scholarship at the New York Institute of Photography.	DeJure Amsco Corp., Shelton, Conn.	September 30
Amateur photographers living in Union County N. J.	To the Scenes and General classes photos taken anywhere in the world may be submitted. The Special Park class is restricted to photos taken within the confines of the Union County Park System.	40 merchandise prizes totaling nearly \$170.	Amateur Photo Contest, P. O. Box 231, Elizabeth, N. J.	September 30
Amateur photographers.	Long Island scenes and activities covering the four counties comprising the Island, including Brooklyn, Queens, Nassau and Suffolk and their adjacent waters.	More than \$500 in cash prizes with additional merchandise prizes. Seven classifications of subjects with cash prizes of \$15, \$10, and \$5 for each classification. Grand Prizes \$100, \$50, and \$25. Other prizes \$10, \$25.	Photographic Society of America, 10 Park Ave., New York City, or The Long Island Association 273 Pennsylvania Station, New York City.	November 1
Anyone	Photograph of a cat suitable for cat show catalog cover.	\$10, \$4, \$3.	Mrs. A. A. Gour, 6638 Kimbark Ave., Chicago, Ill.	November 8

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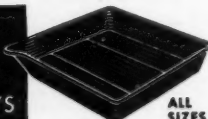
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## Tabletop Background

An unusual forest background for use in tabletop studies is easily made from an enlargement of a negative showing a group of sunlit trees. The effect of shafts of sunlight filtering through the trees is produced by carefully painting the print with radiating stripes across the trees in the middle distance. Be certain that the stripes fall diagonally across the picture from the same direction as the sunlight in the original picture.

Sidelighted tree studies give the most naturalistic effect. If the trees are spaced rather widely apart, strips of paper laid on a piece of glass and held a few inches above the enlarging paper can be used to produce the effect during actual enlarging. Cut the strips so the foreground trees print without striping.

## SALONS

Closing Date	Name of Salon	For Entry Blank, Write to	Number of Prints and Entry Fee	
October 3	New York Salon of Photography 1941	Janet Weston, Salon Sec., 121 W. 68th St., New York City.	4	\$1.00
October 1	Second Pennsylvania International Salon of Pictorial Photography.	Mrs. W. Ken McLaughlin, c/o 3215 N. Front St., Harrisburg, Pa.	4	\$1.00
October 1	Third Annual Atlanta National Salon.	Mrs. George Bird, Salon Sec., 685 Morningside Dr., N. E., Atlanta, Ga.	4	\$1.00
October 1	First Annual International Salon of Nature Photography of the P.S.A.	Russell Gray, 1530 Locust St., Philadelphia, Pa.	4	\$1.00
September 29	1941 International Salon of the P.S.A.	Photographic Society of America, 10 Park Ave., New York City.	4 In any one class	\$1.00
September 25	Annual International Salon of the Victoria Photographic Association.	Alec Gamon, 468 Beach Dr., Victoria, B. C.	4	\$1.00
September 20	Fourth Annual Tri-State National Salon of Photography of the Burlington Camera Club.	Robert B. Prugh, Salon Chr., 317-319 N. Fourth St., Burlington, Iowa.	4	\$1.00
September 15	Second Annual Tri-State Salon of Photography.	Amarillo Photographic Society, 100 Fisk Bldg., Amarillo, Tex.	4	\$1.00
September 3	The London Salon of Photography, 1941.	The Hon. Secretary, The London Salon of Photography, 26-27 Conduit St., New Bond St., London, W. 1.	6	\$1.00
September 1	Ralston's Photographic Exhibit.	Ralston's Drug Store, Weston, W. Va.	4	\$1.00
August 25	Second Reading National Salon of Photography.	R. W. Berhalter, Chr., 637 Court St., Reading, Pa.	4	\$1.00

### Blackout Flash Lamp

The Wabash Blackout Superflash lamp (60c) permits taking pictures in total darkness.

Essentially a Wabash No. 2 with a coating of infra-red dye, it can be used with any camera and flash synchronizer. Infra-red film is used in the camera.

Full details about the use of this lamp will appear next month in MINICAM PHOTOGRAPHY.

### Gas Mask Carrying Case

A cloth bag, in which a World War gas mask was packed, makes a carrying case that holds a half dozen



4 x 5" Speed Graphic double cut film holders, and a dozen Wabash Superflash Press 40 flash bulbs.

Even more Superflash No. 25 or G-E No. 5, 6, or SM lamps can be carried easily in the available space.

Use of this case permits the photographer to have both hands free at all times for operation of the camera. It is light enough and small enough to be carried even in large crowds. It also permits speedy work and enables the operator to dispense with a case-carrying "stooge" when following a fast-moving



story.—Don Wright, Rock Island, Illinois.

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## EXHIBITS AND LECTURES

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City	Street Address	Dates Open	Name of Exhibition
Chicago, Ill.	Marshall Field Co.	July 28 to August 16; 9:30 a. m. to 5 p. m.	Fourth Annual Salon of the Chicago Area Camera Clubs Ass'n.
Essex Junction, Vt.	The Champlain Valley Exposition.	August 24 to September 30; 8 a. m. to 9 p. m.	The Second Annual Champlain Valley International Salon of Photography.
Hyannis, Mass.	24 Ocean St.	August 17 to August 24; 7 to 9 p. m. weekdays, 3 to 5 and 7 to 10 p. m. Saturday and Sunday.	Second Annual Cape Cod Salon of Photography.
New York City	Museum of the City of New York, Fifth Ave. (between 103rd and 104th Sts.)	June 11 through summer; 10 a. m. to 5 p. m., weekdays, except Tuesdays; 1 to 5 p. m., Saturdays.	Youth In National Defense.
Peoria, Ill.	Jefferson Hotel.	August 30 to September 1; 10 a. m. to 10 p. m.	Photo Exhibit National Model Railroad Association.
Sacramento, Calif.	California State Fair Grounds.	August 29 to September 7; 10 a. m. to 10 p. m.	Second Annual North American Salon of Pictorial Photography.
San Salvador, C. A.	Galleries of the International Club.	August 1 to August 20; 8 a. m. to 12 p. m.	Third Annual International Salon of the Photo Club of El Salvador.
Toronto, Ontario	Canadian National Exhibition.	August 22 to September 6, 10 a. m. to 10 p. m.; admission 25c.	The Fiftieth Toronto Salon of Photography.

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### Straightening Prints

Gallon jugs filled with water make excellent substitutes for heavy books or similar weights used to flatten prints laid between blotters. A single jug weighs about ten pounds when filled.

Dry the prints face down on a piece of lintless cloth, then sponge them on the back only with a solution of alcohol and water and place them between the lintless blotters.

Lay a piece of plywood over the blotters and set about four or five gallon jugs of water on the plywood. In the morning the prints will be flat.

### Footswitch

A 19c automobile starter-switch and a dime outlet make a convenient footswitch, suitable for operating enlargers, printers, floodlights and for taking pictures in which you yourself appear, by switching on the light for the time of the exposure. Construction will depend on the type of footswitch you secure from the second hand auto-supply store. Either a starter or dimmer switch can be used. The switch shown was built at the floor-board angle, so a corresponding hole was gouged out of the board to which it is fastened. The switch and the outlet, of course, are wired in series, and twin outlet is used so that two or more appliances can be operated at once. The base-block is painted white so that it is easy to locate in the dark room.—A. J. Lockrey.



## Pendulum Tank Agitator

A film tank agitator that is easy to build and costs nothing to run uses the pendulum principle to agitate solutions. The pendulum is made from a length of scrap lumber, with a piece of



FIG. 1

2x4" material nailed to the lower end as a weight. The length of this pendulum is determined by the distance from table to floor. Make it as long as it can be without bumping the floor. A heavy iron or lead weight attached to its lower end will cause it to swing for a still longer period without attention.

A square box made from cigar box wood is fastened to the top of the pendulum. The sides of this box are 1 1/4" high. The size of the film tank determines the size of the box. A short section of broom handle, fastened beneath the center of the box, acts as a fulcrum upon which the unit rests when it is hung over the edge of a table as in Fig. 1.

For gentle agitation make the square box

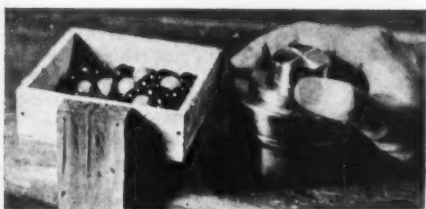
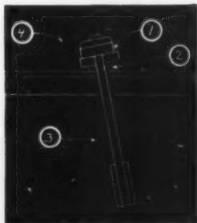


FIG. 2

just big enough to fit snugly around the tank. When the pendulum swings, the tank rocks gently back and forth. For more vigorous agitation, make the *inside* of the box 3/16" wider than the *outside* diameter of the developing tank. Place a number of glass marbles in the bottom of the box and set the tank on them (Fig. 2). Don't crowd the marbles; leave enough space for them to roll freely.

As the pendulum swings, the tank rolls on the loose marbles, bumping first against one side of the box, and then the other. About 3/16" was found the best distance for the tank to move, since this permits definite agitation without being too much of a drag on the pendulum.

—Robert Scott, Saltsburg, Pennsylvania.



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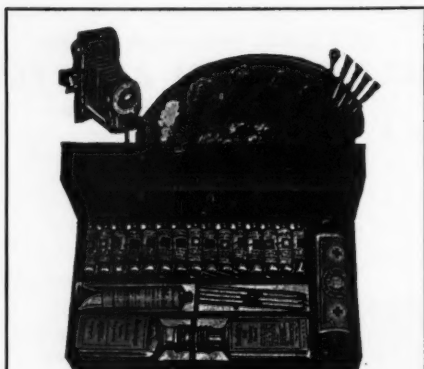
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A lens of standard focal length will produce the equivalent of a telephoto image if the picture area is decreased proportionately. This eliminates the need for a lens of longer focal length when making portraits and other photographs that are best taken with a fairly long focus lens.

In film pack cameras that have a focusing ground glass, the picture area can be reduced one half by inserting a piece of black paper of

the correct size in the bellows just in front of the plane of focus. Thus, 24 shots may be made on a standard 12-exposure film pack, with the added advantage of improved perspective.

Cut the paper just long enough to fit into the fold of the bellows just in front of the ground glass, as

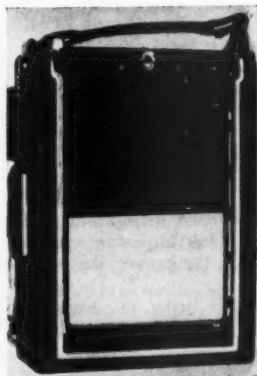


FIG. 1

in Fig. 1. (White paper was used in the illustration to make the mask stand out clearly.) The piece of paper must be wide enough to divide the picture area exactly in half. If it is too wide, a clear streak divides the two shots; if the paper is too narrow, the streak is black. In either case a section of each negative is wasted (see Fig. 2).

In use the mask is inserted in the camera.

Then the scene is composed and focused, with the camera on a tripod. After the exposure the film pack or plate holder is removed and the mask slid to the opposite end of the camera. The next shot is then exposed on the same film. Keep a careful record of the number of shots made and the position of the mask for each shot, since this is the only insurance against repeated double exposure and blanks, when using the mask.

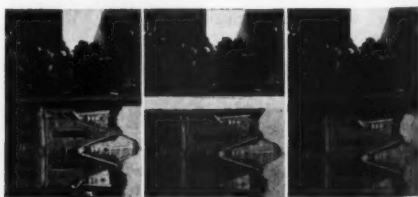


FIG. 2

In sliding the paper back and forth, make certain it is run completely to the end of the bellows groove, or the two images will overlap, spoiling parts of each one.

To make full-size negatives merely remove the mask. The camera can be used in either vertical or horizontal position, but with the mask in place vertical pictures are taken with the camera on its side.

The added advantage of extra poses for the same expenditure of film, and the extra long focal length of the lens when used on half-size pictures, make the mask an excellent accessory for portrait work.—*Tracy Diers, Jamaica, L. I.*

### Protect Prints

To protect exhibition prints or photographs that are handled a great deal, do as the professional photographer does. Take a piece of cellophane large enough to completely cover print and mount. Attach the cellophane to the back of the photo or mount with rubber cement, then fold the cellophane over the face of the print and attach the other end to the back of the mount with cement. If you moisten the front of the cellophane with a piece of damp cotton and allow it to dry, a surface as clear and smooth as glass will result.—*Ray Kershner.*



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The cone may be made from any opaque paper. Sheets used to pack or wrap cut film, or a small section from the wrapping from a roll film will serve. Twist the paper around the end of the flashlight, leaving an opening about 1/16" across at the point of the cone. Fasten the cone to the flashlight with scotch tape or adhesive tape.

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The distance at which the light is held from the paper will govern the area of the print that is exposed at one time. Move the light during the exposure to secure an even darkening of the area.

## Avoid Lint in the Darkroom

Much of the dust and lint found in the darkroom can frequently be traced to the towels used there. Turkish towels, for instance, have a large amount of lint.

Use linen towels in the darkroom, and choose other working cloths with the least amount of lint. Avoid wool, flannel, etc. Linen, cotton, and similar materials generally will produce less lint.

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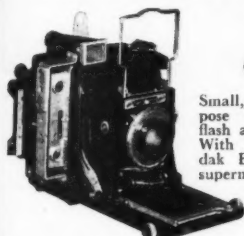
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120.01 - 140.00.....	7.00.....	10.00.....
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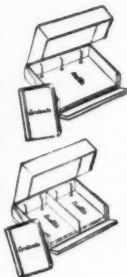
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The Uni-directional agitation produced by this device is more likely to produce streaks in the film than agitation in two or more directions, but with care this method works satisfactorily. The tedium of manual agitation during the long time required for most fine-grain developers to work is eliminated.

The center peg of the turn-table is covered with the metal lid from a wide-mouthed jar. Another lid is soldered (top-to-top) to this lid, providing a receptacle in which to set the film tank.

The reel knob is held stationary by a short length of rubber tubing, split part way to slip over the knob and grip it. The tubing is held by a heavy curved wire, as illustrated, and the wire is anchored to an 8" length of 2x4 that rests beside the turn-table.

Clockwise rotation of the film tank causes the solution to be scooped into the reel from the outside end of the roll of film. If tank and reel "stick" the frictional grip on the knob slips, preventing damage to the parts—Ernest H. Chapin, Evanston, Ill.

## Cooling Unit for Trays



Tray unit fits into tub. It is supported above the tub here to show its depth. FIG. 1

In small homes or apartments, with only limited space for a darkroom, an inexpensive developing unit can be built to nest into the basement laundry tubs (Fig. 1). The solutions



in the trays can be kept at the desired temperature because the larger tank in which they rest contains a water bath. By draping off the area around the tubs, with this unit in place, a temporary darkroom is set up.

The size of the unit depends on the width of the tub. Design it to nest easily into the tub, as illustrated. Fig. 2 shows a unit measuring 11x22" over-all, and 5" deep. Metal strips 7" from each end support the trays. The outside lips rest against the edge of the tub, supporting the unit. The central compartment is for rinsing and washing prints.

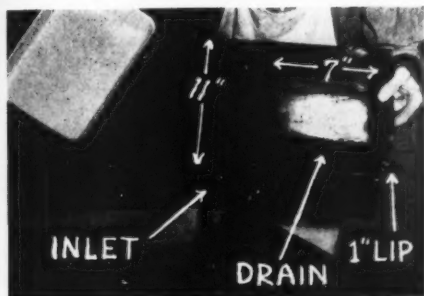


FIG. 2

Galvanized metal, covered with chemical-resisting black paint was used for constructing the unit illustrated. A  $\frac{1}{4}$ " opening takes a rubber hose which connects the combination hot and cold mixer faucet to the tank. A small outlet is cut in the base for quick draining. All seams must be well sealed.—Ormal I. Sprungman, Minneapolis, Minnesota.



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**CAMERA CLUB**

-- NEWS AND IDEAS --

• **INTER-CLUB VISITS** are being sponsored by some of the more enterprising clubs. The Miniature Camera Club of Philadelphia visited a regular meeting of the Baltimore Camera Club in Baltimore, not so long ago. Twenty members made the trip by train. Several took a few prints with them, and gave short talks on their favorite photographic subjects.

There's a splendid chance for inspiration and benefit not to mention the friendly rivalry growing out of inter-club meetings. In the field of hobbies photography has no superior when it comes to friendliness. And combined group meetings are just one more way of keeping that friendly feeling growing among fellow photographers.

• **A QUIZ PROGRAM** was a novel feature of the last meeting of the season for the Miniature Camera Club of Philadelphia. Members submitted questions in advance, many of them covering points on which they wanted information. Some of the questions were gags. A selected group of members answered the questions by lot. A jury of experts rated their answers. Some of the questions started general discussions, others were good for a laugh. Prints by John Hogan were awarded as prizes for the best answers.

Apparently it seldom occurs to a club, to use the outstanding work of its successful exhibitor-members as distinctive awards for winners in local competitions. It marks a forward step in evaluating the work of fellow members to single out their prints for this honor. Why not use this type of prize in some competition this Fall? Such prizes will form the nucleus of a print collection.

Are amateurs so self-centered about their photographs that they hardly think of acquiring good prints from fellow photographers? On the basis of even trade, when the quality of the prints is about the same, this method of enlarging a print collection is by no means costly.

Print exchange between individuals is more neglected than almost any other phase of club activity. Yet a collection of fine prints showing

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the work of fellow camera workers in your locality, is something to be proud of. Many amateurs will be cooperative in this matter. It takes a little pushing to start the ball rolling. Why not begin these mutual-trade collections in your own club?

• **NEW YORK Camera Clubs** can now add another feature attraction to their Club Night Programs. Veteran news-cameraman, Herman Lutz, is now available for informal speaking dates in the New York area. Lutz has trained his movie cameras on nearly all national, social and sporting events of recent times. Make a special note to ask him how he "stole" the Dempsey-Tunney fight pictures. For open dates, write Herman Lutz, Film Center Reloading Service, Box 272, Station G, New York, N. Y.

• **REMEMBER IT'S THE SEASON** for night hikes, and outdoor picture tours. The Glenwood Camera Club, Philadelphia, Pa., schedules a number of these during the past few months. This club has also inaugurated a school for beginners, to help new members get greater enjoyment from the club's activities.

#### PRINT EXHIBIT EXCHANGE

**ONEONTA CAMERA CLUB**, Oneonta, New York, has a traveling exhibit of 28 prints now on tour and will have a second exhibit ready for booking in the Fall. To exchange print exhibits, address: J. H. Thomas, Chairman, Program Committee.

**CAMERA CLUB OF FITCHBURG**, 525 Main Street, Fitchburg, Mass., is arranging the new Fall schedule for the club's traveling show. Address: Elsie L. Lowe, Print Director.

#### NEW CLUBS

**THE CHINESE PHOTOGRAPHIC SOCIETY OF OAKLAND**, 342 Eighth St., Oakland, Calif.

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## Old Photographs

### Show Rate of Tree Growth Over Old Fire Scars

Old photographs can be of value to botanists and foresters in studying the rate of new growth that heals up old scars left in the forests by fires long ago. Such a series, taken at intervals from 1872 to the present time, has been studied by Ronald L. Ives of Ft. Worth, Texas, as a by-product of several geological field trips into the high country of Colorado.

One particular area was burned over during the Indian troubles of 1862-63. In a few places the soil itself was burned away, down to bedrock.

In 1872 came the pioneer photographer, William H. Jackson, accompanying the Hayden geological expedition as official picture-maker. His photographs, still extant, show the dead trees bare and barkless, with grass growing among their trunks.

The next series of photographs was taken in 1878. The grass was then being crowded out by a dense growth of mixed shrubs. After that there was a lapse of 20 years during which there is no existing photographic record. For the decade 1898-1908, however, there are abundant photographic records, which show the shrubs yielding place to the next stage in succession, an aspen forest. Maximum density of the aspen was reached in 1915.

As early as 1900 new conifer growth was showing itself here and there, and by 1920 the evergreens were beginning to overtop the aspens in many locations. Photographs taken about 1920 show the evergreens beginning to assert dominance. In some locations they covered 40% of the area. By 1935, the evergreen percentage had risen to 65, and in 1940 dominance was complete, with only scattered patches of aspen here and there, where growing conditions had not been favorable for the conifers.

Mr. Ives figures a replacement schedule for the region as follows: Maximum brush growth, 25 years; maximum aspen, 40 years; aspen largely eliminated, 65 years; complete elimination of fire scar, 300 years or more.—*Science Service.*

## Photography at Stoneleigh College

Stoneleigh College for girls, established in 1934, was one of the first Junior Colleges to establish photography as a major course. It is located at Rye Beach on the New Hampshire seacoast fifty miles from Boston. Alajos Schuszler, formerly of Brooklyn, N. Y., is Director of the Photography Department and Architectural Advisor.

The Photography Department has a large

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studio classroom, exhibition gallery, portrait studio, finishing rooms, and well-equipped darkrooms, in which films, contact prints and enlargements are separately processed. There is also a room for mixing chemicals and storing supplies.



SCENE IN Studio-Classroom of the Photography Dept., Stoneleigh College, Rye Beach, N. H. Freshmen study the use of the Graflex under supervision as their initial assignment. Photograph by Patricia Hallett, Freshman student in Photography.

Photography students are required to study composition and drawing in the Art Department, and chemistry in the Science department. Elective courses are also provided to give each student a well-rounded education in liberal arts.

The various catalogs, calendars, circulars, yearbooks, and portfolios issued by Stoneleigh College are illustrated almost exclusively with photographs made by the students and their instructor.

The "Winter Project" at Stoneleigh College permits each girl to obtain practical experience in the business world in a field related to the subject in which she is majoring. The college closes for five weeks each winter (usually starting right after New Year's day) and during this period the students take outside employment. Their work on the "Winter Project" is graded along with their regular class work.

### Cameraswomen Wanted for R. A. F.

Women professional photographers are being used by the British Royal Air Force, it is revealed in an announcement recently received here. They are being accepted, it is stated, by the Women's Auxiliary Air Force, known as the W. A. A. F., "for service with Air Force photographic sections at R. A. F. Stations."

"Only women with real experience in general processing (developing and printing) and familiar with the working of a standard camera can be accepted," the announcement warns.



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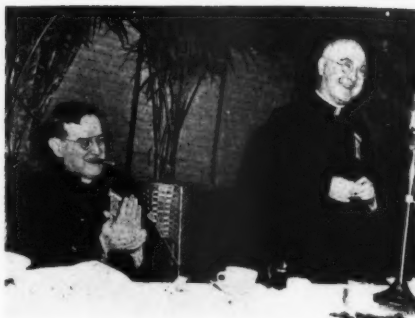


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## Prize Winner



Samuel Falk, member of the staff of *Wide World Photos* in New York, is the winner of the second news picture competition sponsored by the Cigar Institute of America. The victorious entry, conforming to the rules with respect to photographs taken in dignified environments wherein a cigar is displayed, was a flash taken at the Congress of Confraternity of Christian Doctrine, held at the Columbus Club in Brooklyn, and shows Archbishop Spellman of New York speaking before a microphone while Monsignor Edward Hoar is indicated applauding and smiling at a humorous remark made by the Archbishop.

Palms in the rear of the head table at the luncheon-meeting add to the attractiveness of the picture. It was highly praised by the experts. Serving on the board of judges are William H. Zerbe, veteran news photographer of the *New York Herald Tribune*; Bert M. Nussbaum, vice-president of Lambert & Feasley, Inc.; and J. Winton Lemen of the Eastman Kodak Co.

## Photographic Image of Freedom

The entry blank for the "Image of Freedom" Competition conducted by the Museum of Modern Art, 11 West 53d St., New York, N.Y., contains an inspiring statement for all amateur photographers who are looking for an original approach to subject matter. Here is what it says:

"Let us look at these United States now, in these critical days, when our lives and all that gives them meaning are threatened.

"What gives our lives meaning? Why do we feel that, with all its faults, this is the place we want to live? Why do we feel that the foundations of our national life are not only unshaken but capable of supporting a greater, more human structure than any nation, or combination of nations, has yet built?

"We have seen searching photographic studies of the waste of life and land due to

abuses that we allowed to accumulate, and we have seen the beginnings of a reclamation.

"Now let us see, with a vision equally exact, the power which can remedy these faults, the vast, unconscious power of millions of us living on American earth, the spirit born of our thoughts, our ways, our homes, our jobs. Let us look at the earth, the sky, the waters. Let us look at the people—our friends, our families, ourselves. How do we work, how do we play, how do we live? What are our resources and our potential strength? What is our past, our present, our future?"

"In this immense panorama, what, to you, most deeply signifies America? Can you compress it into a few photographic images? Not with the hysteria and jingle of superficial patriotism, nor with the bitterness of protest, but profoundly, simply, with insight and emotion.


"Through one hundred images, chosen from the expression of your varied experience, an image of America is to be built—an image designed to be seen throughout the Western Hemisphere. No other medium carries the conviction that is implicit in photography. In no other medium can the look, the motion, the feel of our life, our work, our land be held instantly, with a completeness and a clarity that cause our half-forgotten experience of a thousand details to rise and tell us, 'This is so.'"



"Since you've been taking candid shots, we never get invited anywhere!"

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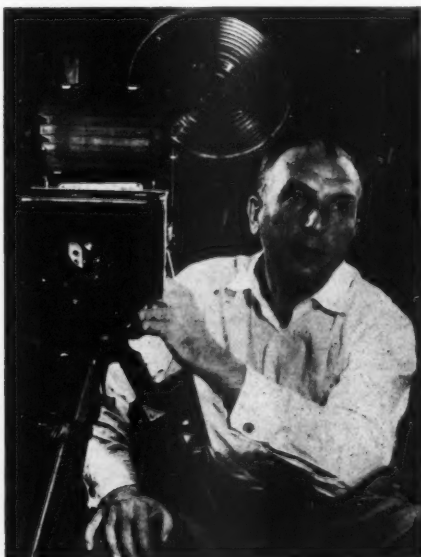
## SHOOTING THE COVER

Leo Aarons, one of our ranking color photographers, is especially noted for his fine studies of children and babies.

His lighting scheme is simple, but unsparing. He uses 12 No. 3 Wabash flash bulbs, each in its own reflector. Eight of these floodlights are placed in symmetrical positions around the model, then one light on either side of the camera and two on the background. The subject is "bathed" in light, evenly and flatly distributed.

To create roundness and accent—2 or 3 selected lights are moved closer to the model. The problem of which lights to "accentuate" is not difficult at all.

If the conventional three-quarter portrait lighting is desired, the lights immediately above and to one side of the model, are moved in. For a back-lighted effect, one light is moved from the background to the back of the model.



LEO AARONS at work in his New York Studio.

For a slightly silhouetted effect, two additional lights are directed against the background.

These lights which are intensified now serve to highlight the portions of the picture which they cover and create the accent of the finished photograph.

Aarons always uses flash bulbs when making color photos. The obvious reason for this is that more light can be used by this method than by Mazda light, therefore allowing for fast shutter speeds and small diaphragm openings. A subtler, but equally important reason is that the child models are not subjected to the glare or heat of mazda lighting which may make them uncomfortable or react against pleasant and spontaneous facial expression.



**THE picture before trimming.**

Aarons places all his lights "blind" and sets in the flash bulbs afterwards. However, as this is only possible after long experience, he advises that the amateur use photofloods in their reflectors for setting-up the picture, replacing them with flash bulbs when ready to expose.

For the cover, a 5x7 Reckmeier one-shot color camera was used with a set of Eastman ABC filters. The lens was a Goerz Dagor set at f/22, the exposure 1/50 second. Ilford plates were used as negatives (note the interesting combination of German camera, American filters and English film). The camera was set at an angle



**ANOTHER picture of the same child was a cover for Parent's Magazine.**

slightly above eye level.

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This results in almost complete elimination of visible light rays but the infra red rays are still transmitted. When used with infra red film, the results are similar to those described in the article on "Blackout Photography" mentioned above.



Because of the variations in cellophane colors, the exact number of layers to be used must be determined by experiment. With the dark red and dark green cellophane sold by variety stores for wrapping gifts, make the first tests with about three layers of each color.

Soak the sheets of cellophane in a pan of water and then wrap them carefully about the glass part of the bulb, removing all wrinkles. After the cellophane is dry, the lamp is ready for use.

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**SPECIAL DARKROOM ISSUE**  
See Next Month's Minicam Photography Magazine  
For New Developments in Darkroom Technique





By J. H. SAMMIS, A.R.P.S.

NO, LADY, a retouching dope is not an insistent petter.

*Baby squints into the floodlights,  
And thumbs his nose at me,  
But it's an awfully cute expression  
As you can plainly see!*

IF YOU COULD BELIEVE all you heard, some photographers have:  
Legs like Gibraltar  
Fingers like thermometers  
Eyes like photo-electric cells  
A time sense like a clock  
Distance judgement like a range-finder  
The worst tough luck!

*SOMETHING LIKE A LEGACY: A model's hosiery must be sheen to be properly appreciated.*

Too many square meals make a model round.

**THE GAUDIER SIDE OF PHOTOGRAPHY**  
A Kodachrome user from Scuddy,  
Was told by a friend, not a buddy,  
"On snow it would pay  
To use a Wratten A",  
And now all his snowscapes are ruddy.

**CLOSE-UP ATTACHMENT ADVICE:**  
Never get so close that you can't see both ears.

**WHAT COMES OF USING ORTHO FILM:** Some of those Hollywood candid photogs must find themselves behind the hate-ball.

**ACROSS THE COUNTER:** "You say these negatives are fogged? Why I've taken pictures in bad weather lots of times before!"

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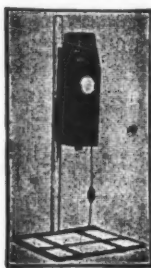
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*Egbert was wild about fillers and such,  
His selection approached necromancy,  
What he knew about fillers was really  
not much,*

*It was the colors that captured his  
fancy.*

NO, LADY, you needn't worry about  
candid photographers using X-ray film.

# THE PHOTOGRAPHER'S SON LEARNS TO COUNT

"What comes before 12?"  
"Edwal".

## L'ENVOI

*Shutter clickers  
Yearn for stickers.*

IT'S NOTHING NEW but did you  
know that:

Collodion and "New Skin" were the same?  
"Camera Obscura" means "dark room"?  
Artificial ice for skating is hypo?

MORE WARLIKE LANGUAGE: Focal-  
PLANES, picture MOUNTS, enlarger  
HELMETS, film TRANSPORTS, film  
HANGARS (sorry!).

A STEP IN THE BLIGHT DIRECTION  
*More prudes;  
Fewer nudes.*

HOT WEATHER LAST LINE: Praise  
alum!



"Were you pretty close to the  
explosion when this was taken?"

# KEEP YOUR DEVELOPMENT AND TEMPER UNDER CONTROL THIS SUMMER



*Defender*

Hot darkrooms . . . ice trays . . . trying to keep  
solutions at 68° is a sure way to get your dander  
up! Why not let your solutions stay hot and keep  
your temper down? Sure you can do it!

All you need is Panthermic 777 developer. Then,  
all your solutions can be at any temperature from  
60° to 90°, or they can all be at different tempera-  
tures . . . yet film after film will come out with  
beautifully fine, smooth grain.

You can have negatives as soft or as brilliant as  
you want them. This is because accurate develop-  
ment tables, individual, for all popular makes of film are  
supplied with 777. They tell you just how long to  
develop your favorite film . . . at any temperature  
. . . to get the contrast you prefer.

You never have to figure added development time,  
for time of development in 777 stays constant through-  
out its life. This, because of its original replenisher  
method that keeps chemical energy at par . . . the  
last film is as good as the first.

Use normal exposure speeds, develop at any  
temperature . . . get consistently beautiful fine grain  
negatives. You don't believe it? Well try it . . .  
you're missing something.

777 is economical. It comes in many sizes, dry  
powder or liquid, ready to use. It's fine on big nega-  
tives, too. Ask your Defender dealer, or write for  
more details to Dept. 8-N.

DEFENDER PHOTO SUPPLY CO., INC.  
ROCHESTER, N. Y.

# GEARMASTER ALL GEAR OPERATION TRIPOD HEAD

(Registered)

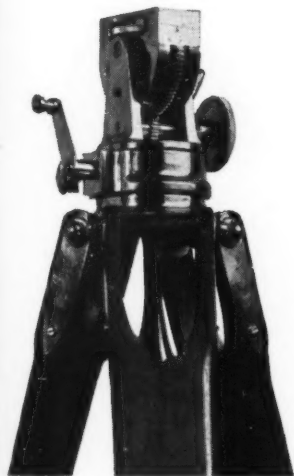
Price **\$16.00**

THE GEARMASTER IS BUILT to give good and long service. It is a precision instrument containing only parts that make it "fool-proof" and easy to operate.

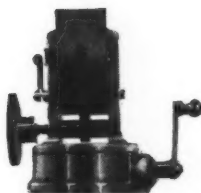
IMPORTANT: By releasing the pan-lock and the tilt-lock, you can take your camera in hand and "roll" the Gearmaster action into any direction or angle without losing accuracy and efficiency. It is **THE** head for your tripod.

**GUARANTEE:** If upon examination and within five days after receipt of same any purchaser of a GEARMASTER tripod camera head is not completely satisfied, full amount of purchase price will be refunded upon return of the instrument.

*America's  
First All-Gear  
PAN-TILT  
CAMERA HEAD*



**SEE IT  
AT YOUR  
DEALER'S  
TODAY**



Pat. Pend.

## *Features of the Gearmaster*

**FIRST:** There is no tilt handle to interfere with the operator either in panning or tilting, or in getting a better view through the view-finder of your camera. This feature will be appreciated by owners of LEICA, CONTAX, PERFEK, ARGUS and many other miniature cameras. The long tilting handle has been the miniature camera users bug-a-boo. The GEARMASTER Posture Pan-Tilt head permits you to "get into" the viewer quicker, easier and better than any other camera head on the market.

**SECOND:** Both the tilting and panning is done by gears—engineered to lock quickly, smoothly when a position is chosen, and released instantaneously at will. A GEAR MOVEMENT IS INDISPUTABLY MORE ACCURATE, SMOOTH, TRUE AND DEPENDABLE than a hand tilt or pan. Look at professional studio tripod heads, the camera cranes of the world-famed motion picture studios and you will see only gear panning and tilting. The GEARMASTER has been designed to surpass . . . not to compete.

**THIRD:** Every GEARMASTER has a built in vial level to insure true horizons and level panning. No more "leaning horizons" in your movies if you use a GEARMASTER.

**FOURTH:** Special study had been given to the professional and amateur 16 mm and 8 mm movie user when designing the GEARMASTER. Here again the handle-less tripod head will give you slow or fast panning and tilting without straining your neck in trying to see what you are shooting. Movie-takers cannot afford to be without a GEARMASTER. It pays for itself over and over again by giving you more footage to the roll of film—by saving you from those shots "that got away because the handle got in my way." This will be appreciated at sports, rodeos, fairs and other places where there is little room and little time to get your picture.

**FIFTH:** The Gearmaster head will fit practically any amateur tripod with a base up to 3 1/2". There is a nominal charge to fit any tripod beyond 3 1/2 inches.

**SIXTH:** You can turn in your tripod head on a trade-in toward a purchase of a new GEARMASTER. From 50c to \$5.00 will be allowed for all makes of heads, regardless of condition, make or age.

## *Photo Engineering Company*

2210 SUNSET BOULEVARD

LOS ANGELES, CALIFORNIA

Results are right

It pays to concentrate on pictures and let Eastman prepare the chemicals. That way you only save time for the more fascinating phases of photography, but fuss and bother, too, and frequently negatives as well.

Only finest laboratory-checked ingredients—Eastman Test Chemicals—are used in Kodak preparations, and each formula designed to do its work supremely well. Stick to Kodak chemicals and you eliminate uncertainty, insure finer negatives and prices. At your Kodak dealer's.

**Kodak DEVELOPER D-72**—widely used for many years, is recognized as the standard developer for many types of photographic papers, including enlarging papers, for positive films, and fast panchromatic negative films and plates.

**Kodak FINE GRAIN DEVELOPER DK-20** has proved its ability to produce negatives of extremely fine grain within normal development times with minimum effect on emulsion speed.

**Kodak DEVELOPER D-19** is a rapid, clean-working developer recommended particularly for press and commercial films.

**Kodak DEVELOPER D-76** enjoys great popularity because of its wide usefulness. Its applications range from miniature films to color separations from Kodachrome. Realizes full emulsion speed; produces a long graduation scale.

**Kodak DEVELOPER DK-60a** is Kodak's newest developer for roll and sheet films. It provides a useful combination of relatively fast developing action with long life, and is especially suitable for tank use.

**Kodak DEVELOPER D-11** is recommended for black-and-white positive film, including material for 2x2-inch slides, and lantern-slide plates. It can be depended upon

to produce moderately high contrast and is often useful with negative materials for copying.

**Kodak UNIVERSAL DEVELOPER** (tubes) provides an easy and convenient method of preparing small volumes of dependably fresh developer for films, plates, and papers.

**Kodak ACID FIXING POWDER**—available in unit sizes for the quick and easy preparation, in quarts, half-gallons, and gallons, of an acid fixing bath which is equally suitable for films, plates, and papers. Other Kodak fixing materials: Single-Powder Hardener and Fixer; Rapid Fixer (Concentrated Solution); Testing Outfit for Rinse and Fixing Baths.



**EASTMAN KODAK COMPANY, ROCHESTER, N. Y.**

